

Large pipes equalize lake levels

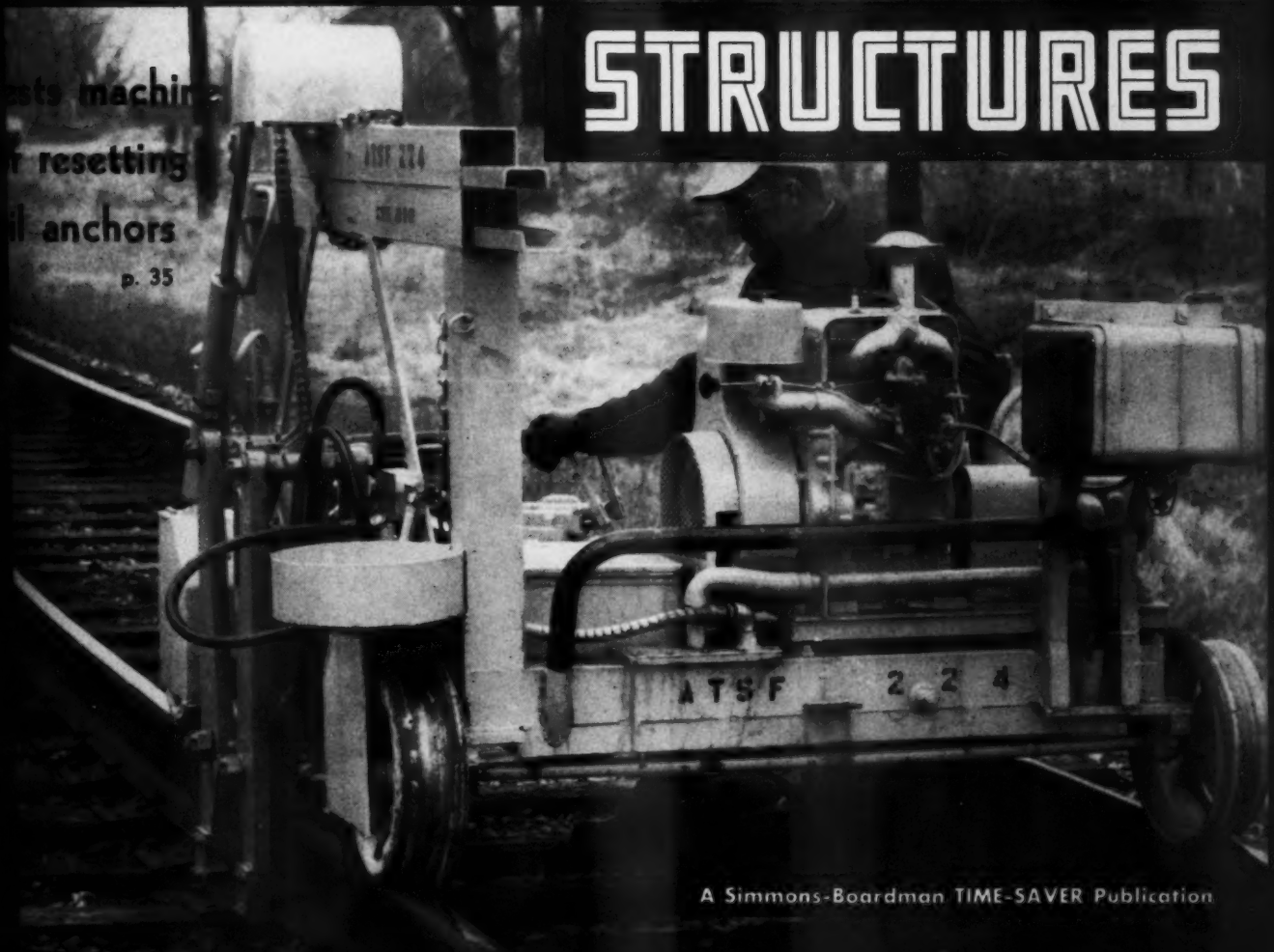
p. 34

May 1961

Railway **TRACK** and

**STRUCTURES**

Tests machine  
for resetting  
rail anchors  
p. 35



# LINE TRACK WITHOUT HUMPING

*with*

*The Kershaw*

## Track Liner



Note Unobstructed Visibility Along Rail. Wheels In Work Position (Above) Also Are Used To Set Machine Off On Side Set-Off.



Track Liner In Travel Position.

NOW . . .utilizing the new inertia concept developed by Kershaw you can line track without humping, and at a speed guaranteed to match any tandem-tamping gang on any railroad. The Kershaw Track Liner utilizes the inertia principle in track. . . which means that no rail dogs are used to clamp machine to the rail. Consequently, track is lined quickly and smoothly without humping.

In the Kershaw Track liner operation, weights are used to bump the track into the desired position. This eliminates the necessity of using, and having to re-set, anchors or spuds.

Only one man is required to operate the Kershaw Track Liner and it may be used with any device for lining the track into the final position.

Another FIRST For Kershaw — The Kershaw Track Liner.

**KERSHAW**  
MANUFACTURING CO. INC.

MONTGOMERY



ALABAMA

# Need SPECIAL TRACKWORK? Leave it to Bethlehem

A yard ladder-track is a pretty sizable piece of trackwork to put together indoors. Yet here is a compound ladder-track on one of the layout floors at our Steelton, Pa., plant, and there's plenty of room to spare!

Special trackwork of all kinds is a Bethlehem specialty. If you need special track, whether it be heat-treated stock rails or double-slip switches, you can bring the problem to Bethlehem trackwork specialists . . . and leave it with them.

Their first move will be to draw up plans for your approval. Next, they'll fabricate the various components and completely assemble them in our plant. When everything fits, when bolt holes, gage, and alignment check, they'll matchmark the pieces to correspond with similar markings on the plan, then ship the material to your job site.

This Bethlehem technique will save you money through elimination of field-cutting, curving, and drilling of rails. Cuts out scrap loss too. A Bethlehem engineer will be glad to discuss details and answer your questions. Get in touch with him through the nearest Bethlehem office.

**BETHLEHEM STEEL COMPANY**  
BETHLEHEM, PA.

Export Sales: Bethlehem Steel Export Corporation



for Strength

... Economy

... Versatility

## BETHLEHEM STEEL



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# 2

## NEW JACKSON UTILITY TAMPERS



### MOST ECONOMICAL, HIGHLY EFFICIENT AND VERSATILE TAMPERS FOR A WIDE RANGE OF WORK

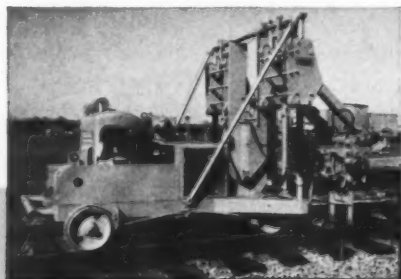
**MODEL JRMT:** Equipped with Diesel engine, large, extra-capacity generator and 4 Vibratory Tamping units of the most powerful Jackson Track Maintainer type, this machine has maximum penetrating power in hard going, readily handles large ballast, badly fouled and cemented conditions. It's an excellent tamer for all work, in any kind or condition of ballast, whether it be jointing, smoothing, spot tamping and even surfacing when production tampers are not indicated or available. Very fast for new construction or any high lift work.

**MODEL JSMT:** Has gasoline engine and 4 TM1161 Vibratory Tamping Units. This is an excellent machine for work in all

but the most difficult going . . . an ideal all-around tamer for yard and branch line spot tamping and surfacing work, tightening up behind the tie gang and emergency tamping. OK, too, for general use in small or soft ballasts. Excellent for new construction and high lift ballast insertions anywhere.

#### SIMPLIFIED FOR EASY, ECONOMICAL MAINTENANCE:

Both of these relatively low-priced models are simplified in design, power plant and controls for easy, economical operation and maintenance. Tops optionally available. You'll find the one best suited to your requirements an exceedingly good investment. Detailed information is yours for the asking.



**CROSS TAMPING:** Jackson Tampers, like no others, are highly efficient in cross tamping because of their unique and powerful vibratory action which uniformly consolidates to maximum compaction a perfect tie bed of large proportions right under the rail base where it belongs.

**JACKSON VIBRATORS, INC.**  
LUDINGTON MICHIGAN



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RAILWAY TRACK and STRUCTURES

## Features

- Railroad problems and prospects** ..... 27  
B. R. Meyers appraises the railroad situation today and tells what M/W men can do to help assure the industry's future.
- For brush — What kind of treatment?** ..... 30  
Discusses experiments with application methods and formulations to obtain better control of hard-to-kill species.
- Prefab freighthouse is ½ mile long** ..... 32  
Describes the Santa Fe's new rail-truck freight terminal at Kansas City, which features modern concepts of design and construction.
- Large pipes equalize lake levels** ..... 34  
Tells how the Union Pacific installed 10-ft and 18-ft Multi-Plate corrugated metal pipes in a new fill above a dam site.

- Tests machine for resetting rail anchors** ..... 35  
Santa Fe has established a test section of track to determine the practicability of squeezing boxed anchors against the tie mechanically.

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## Don't miss . . .

Railroad engineers are finding that epoxies have advantages for a host of applications in bridges, buildings and even tracks. This special report will tell what they are, what they can do, and where they're used.

... in the June issue



## Giant Armco Structure Helps L&N Bypass Failing Tunnel at Low Cost

To bypass a failing tunnel on L&N's northern Kentucky section, tracks first had to be rerouted over a small, but seasonally hazardous stream. An Armco MULTI-PLATE® Structure—20-feet in diameter, 100-feet long—was chosen to "bridge" this stream.



For durable,  
economical  
construction

There were good reasons. It offered top performance at low initial cost. Installation could be completed in a matter of weeks, lessening the danger of washouts or excavation delays. Maintenance would be eliminated, too.

MULTI-PLATE Structures—newly expanded to unusually large diameters by Armco's recently-developed *ring compression* design method—may help you save money, too. For complete data, write Armco Drainage & Metal Products, Inc., 6241 Curtis Street, Middletown, Ohio. *It costs you nothing to find out.*



**ARMCO Drainage & Metal Products**

# Pre-Emergence Weed Control That Lasts All Year Long

## Nalco® H-174® Granular Weed Killer Gives Excellent Control At Low Dosages

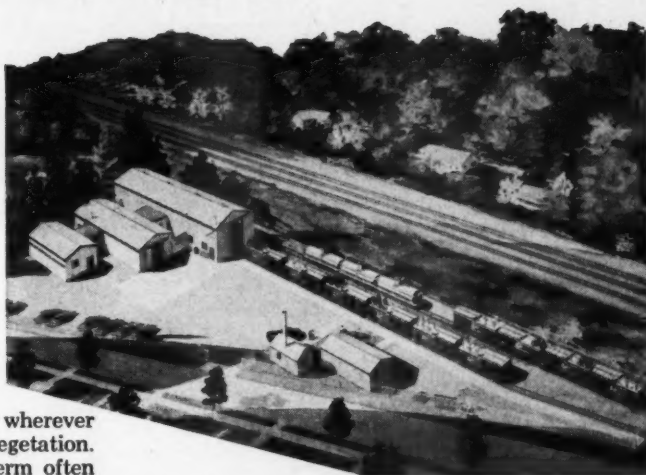
Weed control by pre-emergence applications of formulated organic herbicides ... in dry, granular form ... originated with Nalco. And Nalco's constantly improved soil residual type weed killers still do the job best—in yards, around fences, bridges, and buildings—or wherever you need an area kept clean and free of vegetation. "Broad spectrum" weed control is a term often used to describe H-174 ... a convenient abbreviation for the fact that it provides a long lasting kill of virtually any type of grass or weed!

### Clean, Weed-Free Areas

Pre-emergence treatment with Nalco H-174 kills seedlings when they sprout, prevents the trashy appearance and fire hazard of a stand of dead and dried out weeds. And it saves the labor of cleaning up after weed killer treatment. That's why, although you can apply it any time, the best time to put down Nalco H-174 is just before the weeds come up. Anti-leaching characteristics of the hard, granular formulation assure a residual effect that helps prevent regrowth for a full season ... and sometimes beyond, thus lowering dosage requirements in succeeding years.

### Low Dosage = Less Labor, Storage

Nalco H-174 contains a powerful active ingredient, made even more effective by using it in this dry



This maintenance center keeps Nalco's modern spraying and spreading equipment in tiptop condition for precision application of weed and brush control chemicals. It is one more reason a Nalco program is the most effective way to attack any weed or brush control problem.

carefully-sized granule form. The small granules drop right to the soil, attack vulnerable seedlings or roots. You do a thorough job with less chemical because H-174 delivers more killing power at the best killing spot. And working with a smaller volume of chemical greatly simplifies application—saves storage space, transportation costs and labor!

### Now Is the Time for Action

Early-season action on weed control with Nalco H-174 gives you year-long protection, and extra fair-weather time for other maintenance work. Your Nalco Representative will be glad to help you get a prompt start. Call him, or write to Nalco for help with any weed or brush control problem.

### Chemicals and Services to Fit All Your Needs

How should you approach a weed control problem? Look for a program. Choose the source that will give you a vegetation survey and pre-season planning; offers a wide selection of weed and brush killers (almost any you can name!) for any soil, climatic and vegetation condition; includes efficient spreading and spraying equipment; has trained personnel to supervise application; and provides post-season evaluation reports. Only Nalco makes it all available in a package that will deliver best possible weed control for the budget you command.

### NALCO CHEMICAL COMPANY

6196 West 66th Place

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Subsidiaries in England, Italy, Mexico, Spain,

Venezuela and West Germany

In Canada: Alchem Limited, Burlington, Ontario



NEW self-propelled spreaders for Nalco H-174 weed killer speed up application in yards and other areas.

**Nalco®** ... Serving the Railroad Industry through Practical Applied Science



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5

## NEW IDEAS

TO CUT TRACK MAINTENANCE COSTS

by



### Setting Spikes *Automatically* for Driving

New Idea, AUTO-SPIKER eliminates need for hand setting spikes by feeding spikes to each of four guns. A single operator now can have complete control of nipping ties, feeding spikes and driving spikes. Automatic spike feed is a component of the new RMC Auto-Spiker and can be factory-installed on existing SpikeMasters.



# Railway Maintenance Corporation

Ask for Data Bulletins on  
Any Product Shown

PITTSBURGH 30, PA.



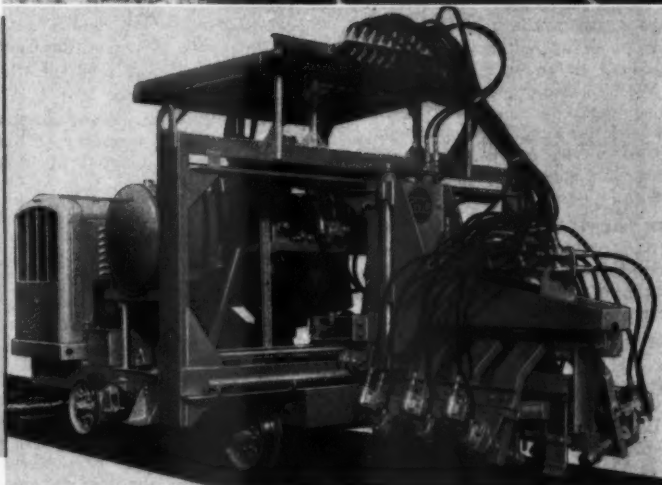
## Surfacing Joints

**New Idea, JOINT SURFACING DEVICE** consists of a 4-wheeled aluminum cart and two 14' aluminum beams. Unit provides a direct dial reading of low spots, each rail indicated separately.



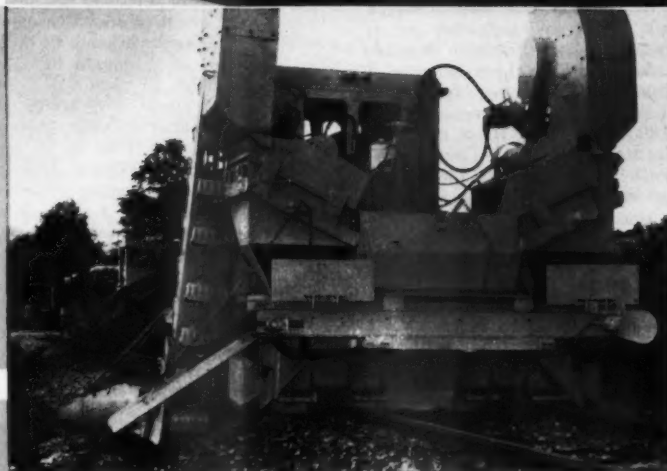
## Tightening and Removing Rail Joint Bolts

**New Idea, BOLTMASTER** tightens three to four joints per minute with a single operator . . . using hydraulic torque wrenches for tightening or removing six or four bolts. Individual controls allow replacing broken bolts or lock washers.



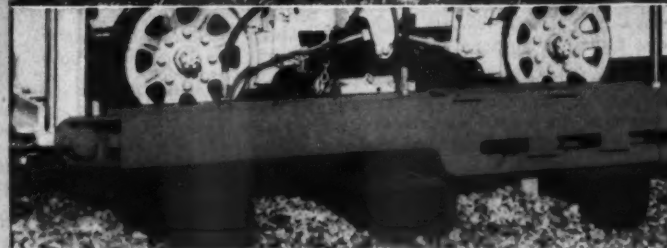
## Cleaning Ballast with the Distributor

**New Idea, CLEANING ATTACHMENT** for McWilliams Ballast Distributor permits cleaning ballast while positioning it in the track for tamping. Also, out-of-face cleaning at speeds up to 1200 feet/hour is possible. The attachment can be mounted to existing Distributors.



## Spacing Ties

**New Idea, POSITIVE HYDRAULIC CLAMPING** for RMC Tie Spacer, which now makes machine effective for either unraised track or out-of-face work. Interchangeable high-speed cylinders for skeletonized track now are available.





**F. S. Hutton**  
GTW



**H. M. Williamson**  
SP



**William J. Jones**  
SP



**Charles E. Neal**  
SP

**BALTIMORE & OHIO**—Ben J. Johnson, Jr., division engineer at Baltimore, Md., has been promoted to engineer maintenance of way, Western Region, with headquarters at Cincinnati, Ohio, succeeding James W. Purdy who has retired after more than 44 years of service. Alva M. Weston, senior assistant engineer at Baltimore, retired recently.

**CANADIAN PACIFIC**—W. A. Smith, assistant engineer track at Montreal, Que., has been appointed acting engineer of track there, succeeding J. M. Benthon who has been temporarily assigned to special duties.

**DENVER & RIO GRANDE WESTERN**—A realignment of this company's divisional setup has been announced. The road's three divisions—Pueblo, Grand Junction and Salt Lake—have been replaced by two divisions—Colorado and Utah, with headquarters at Denver and Salt Lake City, respectively. Changes that have occurred as a result of this reorganization are as follows: Earl P. Hackert, division engineer at Salt Lake City, Utah, to trainmaster at Grand Junction, Colo.; Roy D. Combs, division engineer at Grand Junction, transferred to Salt Lake City; H. O. Chappell, Sr., roadmaster at Minturn, Colo., transferred to Glenwood Springs, Colo.; W. J. Huntsman, supervisor structures at Grand Junction, transferred to Salt Lake City; W. J. Brookshire, supervisor structures at Salt Lake City, transferred to Glenwood, Colo.; M. D. Kenyon, roadmaster at Grand Junction, to assistant roadmaster there; J. L. Oxment, track supervisor at Grand Junction, transferred to Helper, Utah; Z. G. Summerfield, assistant roadmaster, to track supervisor at Glenwood Springs; J. C. Baughman, track supervisor at Glenwood, transferred to Minturn, Colo.; and M. T. Ruchman, assistant engineer at Grand Junction, transferred to Denver, Colo. J. E. Johnson has been appointed track supervisor at Steamboat Springs, Colo.

**ERIE-LACKAWANNA**—George D. Stoddart, track supervisor at Binghamton, N. Y., has been promoted to general roadmaster at Youngstown, Ohio. He is succeeded by D. R. Grimes, roadmaster at Hoboken, N.J.

**GRAND TRUNK WESTERN**—F. S. Hutton has been promoted to assistant chief engineer, with headquarters at Detroit, Mich. Prior

to his new position, Mr. Hutton was engineer maintenance of way on the Canadian National at Toronto, Ont., parent company of the GTW.

**NEW YORK CENTRAL**—James J. Hassett, bridge and building inspector at Buffalo, N. Y., has been promoted to materials engineer at Syracuse, N. Y.

**ROCK ISLAND**—M. Wright, track supervisor at Brinkley, Ark., has been appointed acting roadmaster at Little Rock, Ark., succeeding G. B. Winters who is on leave of absence due to illness. Mr. Wright is succeeded by E. Ellis, extra gang foreman on the Arkansas division.

**SANTA FE**—W. S. Autrey, regional engineer at Los Angeles, Calif., has been appointed district engineer there succeeding R. L. McDaniel, whose death is noted elsewhere on this page. Mr. Autrey is succeeded by W. L. Seabridge, division engineer at Fresno, Calif. W. H. Clark, division engineer on the Panhandle & Santa Fe at Amarillo, Tex., part of the Santa Fe System, has been promoted to district engineer at Topeka, Kan., succeeding Frank Helm who has retired after 48 years of service. Mr. Clark is succeeded by W. H. Baker, division engineer at Las Vegas, N. M.

W. H. Liourance, valuation engineer at Topeka, retired on April 1 after 48 years of service. Ward E. Peterson, assistant engineer at Topeka, retired recently after more than 34 years of service.

W. W. Toliver, office engineer at Los Angeles, has been promoted to division engineer at Winslow, Ariz., succeeding C. L. Holman who has been transferred to Fresno, Calif. Mr. Toliver is succeeded by K. C. Keoney, assistant office engineer at Los Angeles.

**SOUTHERN**—Wilbur J. Parrish, track supervisor at Dalton, Ga., has been promoted to assistant division engineer at Atlanta, Ga. Archie A. Davidson, Jr., has been appointed track supervisor at Cochran, Ga.

**SOUTHERN PACIFIC-TEXAS & NEW ORLEANS**—Harry M. Williamson, chief engineer, Pacific Lines, San Francisco, Calif., has been promoted to chief engineer—system, and W. J. Jones, engineer maintenance of way and structures, Pacific Lines, San Francisco, has been promoted to engineer maintenance of way and structures—system. They will maintain headquarters

at both San Francisco and Houston, Tex. Charles E. Neal, division engineer of the Northwestern Pacific at San Rafael, Calif., a subsidiary of the SP, has been promoted to assistant engineer maintenance of way and structures, with headquarters at San Francisco. Thomas Godley, roadmaster at Coos Bay, Ore., has retired after more than 40 years of service.

## Obituary

Ralph L. McDaniel, district engineer on the Santa Fe at Los Angeles, Calif., died on February 24 at the age of 63.

## Biographical briefs

Thomas L. Fuller, 35, who was recently promoted to engineer of bridges of the Southern Pacific at San Francisco, Calif. (RT&S, Nov., p. 10), was born at Austin, Tex., and graduated from the California Institute of Technology in 1946 with a Bachelor of Science degree. He did graduate study at the University of Texas. Mr. Fuller entered railway service in January 1948 with the Texas & New Orleans (Southern Pacific Lines in Texas and Louisiana) as a draftsman at Houston, Tex. Eleven months later he was appointed structural draftsman there. He was promoted to structural designer in 1951, engineer-draftsman in 1952, assistant resident engineer in 1954, assistant supervisor structures in 1955 and supervisor structures in 1958. Mr. Fuller was further promoted to assistant engineer of bridges of the SP at San Francisco in August 1960, the position he held at the time of his recent promotion.

Howard B. Clarkson, 36, who was recently promoted to assistant engineer maintenance of way of the Delaware & Hudson at Albany, N. Y. (RT&S, Dec., p. 10), was born at Sharon, Conn., and graduated from Rensselaer Polytechnic Institute in 1951 with a Bachelor of Science degree in civil engineering. Mr. Clarkson entered the service of the D&H in 1951 as a levelman at Albany, being promoted to draftsman there six months later. He was further promoted to assistant engineer, also at Albany, in 1953, engineer structures in 1956 and assistant to chief engineer the following year. Mr. Clarkson was serving in the latter capacity at the time of his recent promotion.

Harry B. Berkshire, 37, who was recently promoted to district engineer on the New York Central at Detroit, Mich. (RT&S, Nov., p. 10), was born at Logansport, Ind., and graduated from Purdue University in 1949 with a Bachelor of Science. (Continued on page 60)

# HOW TO STRETCH YOUR WEED KILLER DOLLAR THREE WAYS

## NEW PRODUCTS

**UREABOR® 31**—New granular combination of 3 proven weed killers for dry application. Kills a greater variety of weeds, more effectively than any other herbicide on the market. One application keeps weeds down for a whole season. Effective control, plus low application rate and ease of application really stretch your weed killer dollar.

## SERVICE

**UREABOR 62**—New HIGH CONCENTRATION granular weed killer is chemically the same as UREABOR 31—only double strength—especially designed for the large volume user. Stretches your weed killer dollar even more as you save on freight, handling and application costs.

## EQUIPMENT

Only U. S. BORAX offers the services of 23 experienced field men—who know your local weed, soil and weather conditions. They are available now to advise and *show you how* to get the most stretch from every dollar in your weed killer budget.

From yards and switches to rights of way and bridges, U. S. BORAX can recommend a choice of weed killer spreaders from hand operated PCB Spreaders to power driven equipment to give you the most economical herbicide application possible. This equipment is specifically developed to stretch your weed killer dollar by applying U. S. BORAX weed killers most economically in every situation.

Want to learn more about stretching your weed killer dollar? Write today for complete information.

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assures proper ap-  
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types of rail regard-  
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● **STRIKING FACE** pro-  
vides a perfect tar-  
get for fast, accu-  
rate application by  
men or machines.

**-POWER<sup>®</sup>** DESIGN MEANS GREATER HOLDING POWER

You get greater *rail gripping* power — up to 4 times greater than tie-in-ballast! You get greater *bearing area* — up to 5 times more contact surface. Track creeping, due to stresses of traffic or thermal changes, is *stopped cold* with this exclusive **T-POWER** combination. Result: Greater protection for switch points, rail joints, turn-outs and frogs, on conventional or welded rail.

There are many more reasons why **FAIR** is the world's largest selling rail anchor. Ask one of our men to give you the **T-POWERful** story or write for a complete bulletin.

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**IMPROVED FAIR<sup>®</sup> RAIL ANCHOR**



... a résumé of current events throughout the railroad world

A decrease of 5.6 per cent in the number of cars loaded with revenue freight has been forecast for the second quarter of 1961 compared with the same period in 1960. The forecast was made by the 13 Regional Shippers Advisory Boards in reports to the Car Service Division of the AAR. On the basis of this estimate carloadings of the 32 principal commodity groups surveyed will be approximately 6,051,000 in the second quarter of the year.

General Motors Corporation was indicted by a federal grand jury in New York last month on charges of using its economic power illegally to monopolize the manufacture and sale of railroad locomotives. The indictment charged that by various illegal practices — routing rail shipments to favored purchasers, financing the sale or lease of locomotives on terms its competitors could not match, etc. — the locomotive business of GM's Electro-Motive Division was increased from 47.1 per cent of the total market in 1946 to 84.1 per cent last year. Two competitors — Baldwin-Lima-Hamilton Corporation and Fairbanks, Morse & Co. — were driven from the market, it was charged.

A presentation made by the operating unions before the Presidential Commission on the work-rules dispute with the railroads spelled out demands previously announced in general terms. Included are a guaranteed annual wage, a shorter work day and work week, new overtime rules, daily, weekly and monthly earnings guarantee, paid holidays, differential pay for night work, pay for time held away from home, minimum-crew consists and a training program for firemen and engineers.

The anti-merger campaign of the railroad labor unions is now under way at the White House and on Capitol Hill, as well as at the ICC. Responding to a plea of the Railway Labor Executives Association, President Kennedy has asked Secretary of Labor Goldberg to study the impact of railroad unemployment, including the merger phase of the problem. On Capitol Hill, Representatives Bennett of Michigan and Staggers of West Virginia have proposed House Joint Resolutions 355 and 365, respectively, asking for the suspension of ICC authority to approve railroad mergers until December 31, 1962.

A report of the Canadian Royal Commission on Transportation, based on a two-year study, warned Canadian politicians and various pressure groups to stop placing heavy burdens on the nation's railroads. The commission said the railways should, with annual government subsidies, gradually be allowed to get out of unprofitable passenger runs and to withdraw from low-traffic branch-line service. It attacked the statutory rates on export grain traffic as "unremunerative," holding that railways should be relieved of the burden to the extent of their annual losses, and also proposed that the obligation of statutory free transportation be lifted.

An air-bus, capable of flying 2,000 mph, would generate a whole new class of passengers, according to engineers of the Convair division of General Dynamics Corporation. The new vehicle would do away with some of the luxuries of existing airliners such as windows, seat comfort, fancy meals and cocktails, but it would permit a reduction of from 10 to 25 per cent in fares.

Truckers' ton-mile "take" in 1959 was more than four times the rail average. For-hire truckers, including both common and contract carriers, got a weighted average of 6.183 cents per ton-mile while railroads were collecting only 1.445 cents, according to the ICC's Bureau of Transport Economics and Statistics.

# Fairmont

## INSPECTION MOTOR CAR

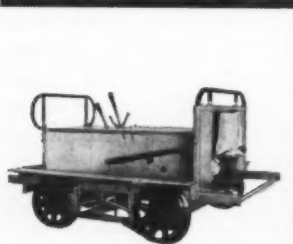
**Goes anywhere—with power to spare!**

Neither wind, nor grade, nor severe operating conditions shall delay your crews from getting through in a Fairmont M19 Series AA Inspection Motor Car. It transports up to four men—on time and with power to spare!

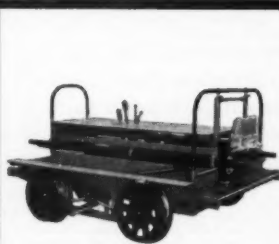
The proved dependability of the Fairmont M19 results from its balanced combination of power, strength and weight. Its rugged 2-cylinder engine delivers 10 to 14 horsepower. Both cylinders fire at the same time for vibration-free performance in either forward or reverse. An efficient strength/weight ratio is achieved by a frame of heat-treated aluminum alloy, plus cylinders, crankcase, pistons and rods of aluminum.

For unequalled weather protection, equip the Fairmont M19 with aluminum cab, windshield wipers, rail sweeps and electric lights. Or, for additional economy under light operating conditions, choose the optional one-cylinder ball or roller bearing engine. Get all the facts on the full line of Fairmont Motor Cars—including the M19 Series AA—by writing us today.

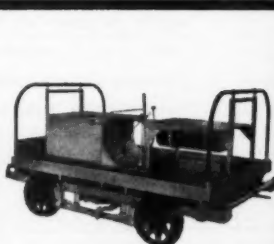
*Fairmont equipment is available for lease.*



**S2 SERIES AA STANDARD SECTION CAR.** Seats 8; load capacity—1800 lbs.; smooth-operating 2-cylinder engine.

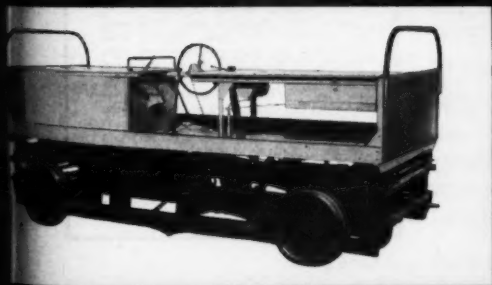


**M14 SERIES H LIGHT SECTION CAR.** Ideal for small gangs of 2 to 6 men where handling ease is important.



**A5 SERIES C MEDIUM-DUTY GANG CAR.** Pulls loaded trailers. 4-cylinder engine, 4-speed, full reverse transmission.

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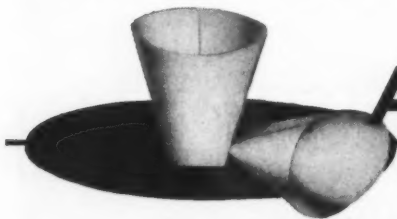
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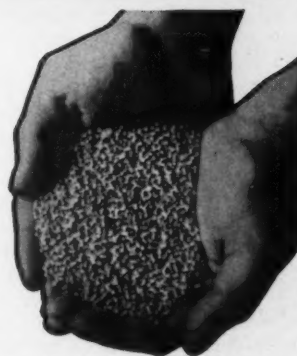
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**RAILWAY TRACK and STRUCTURES**

**May, 1961   17**

## This question of meetings and exhibits

### High-strength bolts

Recently a bridge-erection contractor stated that some railroads were old-fashioned in their insistence on specifying rivets for making field connections for new steel structures. He complained that this was becoming a problem because of the difficulty of obtaining riveters. Almost all skyscrapers and modern bridges, he said, are now being erected by using bolts and by welding, so that no new riveters are being trained.

In discussions of this matter with several railroad bridge men, a number stated that they were using high-strength bolts for making all field connections and also for replacing loose rivets in existing bridges. They pointed out that, while five men were required for riveting, only two men were necessary for bolting. They felt that, although the higher price of the bolts made the cost about the same as for riveting, they were getting stronger connections without the inconvenience of having to recruit five specialized men.

On the other hand, the canvas revealed that a few bridge engineers still preferred rivets to bolts. Their primary reason was that they feared failure because of improper bolt tightening. In addition, they still had riveters among their work forces.

Since few, if any, new riveters are being developed in the ranks, bridge men must face up to the fact that eventually they must all resort to the use of high-strength bolts. Such use must be accompanied by the realization that the proper bolt-tightening procedure should be used, along with adequate follow-up inspections.

In recent months questions have been raised regarding the frequency of the full-scale meetings held by associations of railroad officers in the engineering and maintenance of way fields. Similar questions have been raised regarding the product exhibitions sponsored by associations of supply companies affiliated with these railroad groups.

As a result of these questions various proposals have been made which, if adopted, would have the effect of lengthening the intervals between full-scale association meetings and also between the product exhibitions scheduled to coincide with them.

The railway groups referred to are the AREA and the Roadmasters' and B&B associations. The supply groups are the National Railway Appliances Association, which is affiliated with the AREA, and the Association of Track and Structure Suppliers, which is identified with the Roadmasters' and B&B associations. The practice has been for the NRAA to sponsor exhibits at three-year intervals at meetings of the AREA in March, and for the AT&SS to hold an exhibition every three years in September during the meetings of the Roadmasters' and B&B associations. The manufacturers have thus had an opportunity to exhibit at intervals of 18 months.

This magazine is convinced that any drastic changes in this pattern of meetings and exhibits should be made only after the most careful consideration of the possible consequences.

Each of these railway associations performs an important service to the railroad industry. Proposals for lengthening the period between full-scale meetings have reportedly been made on the grounds that economies would thereby be effected. Investigation has failed to reveal evidence to the effect that such economies would amount to more than a nominal amount. The apparent reasoning is that the railroads, with earnings at a relatively low level, must seize on every opportunity to reduce costs. Would it not be more realistic to take the position that annual meetings of these associations, since their purpose is to disseminate cost-saving information, should rank higher than ever during periods of depressed earnings?

The reasoning has also been advanced that, since product exhibitions are a source of expense to the manufacturers, fewer exhibitions would result in less expense and would, therefore, lead to lower costs for the materials and equipment purchased by M/W departments. Among manufacturers the consensus seems to be that the exhibits are a sales tool and that, with this tool curtailed, it would be necessary to resort to other sales techniques, with no reduction in expense and no reduction in prices.

Another consideration arises from the rapid developments taking place in M/W machinery. Exhibits no more than two years or so apart are considered necessary to keep railroad men adequately advised of these developments.

If those advocating important changes in the present set-up are to prove their point they will have to advance more convincing reasons than have been offered to date.



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*For new Los Angeles freight terminal...*

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Buildings contiguous to the terminal are also constructed of concrete. The office building, salvage area and dispatch office have curtain walls of precast concrete, faced with ceramic veneer—91 panels in all.

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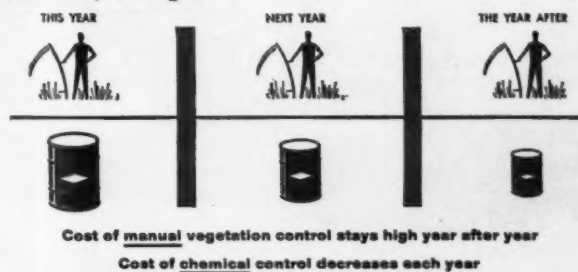
Dow tailor-makes chemicals for every vegetation problem. *Ballast and berm:* Low-cost Radapon® kills grasses, tops and roots; Kuron® or 2-4 Dow® Weed Killer, Formula 40® controls broad-leaf weeds. For longer residual control, these products may be used in combination with soil-sterilant type products.

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*Signals, switches, yards and bridges:* Baron® or Garlon® for both broad-leaf weeds and grasses.

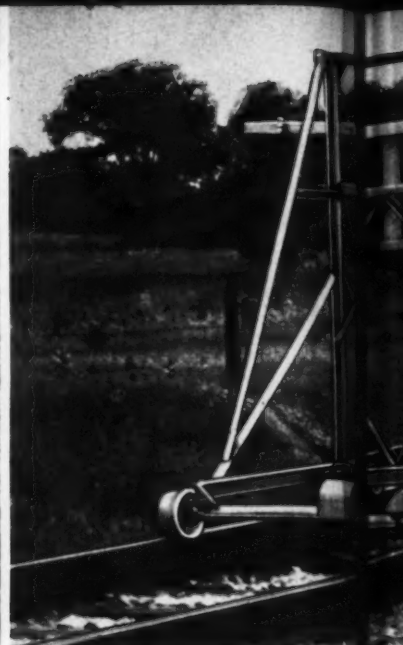
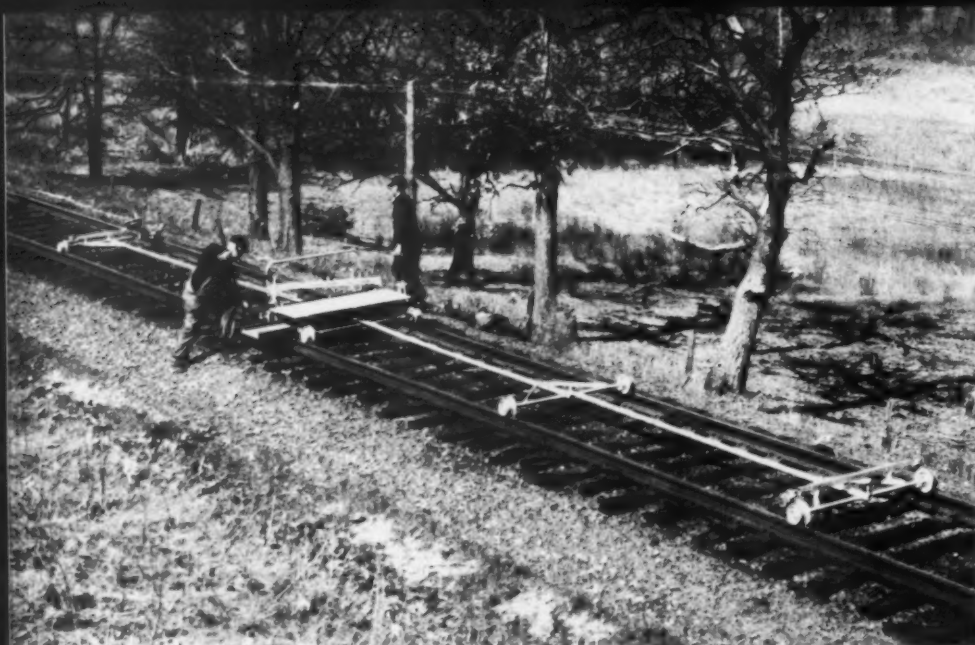
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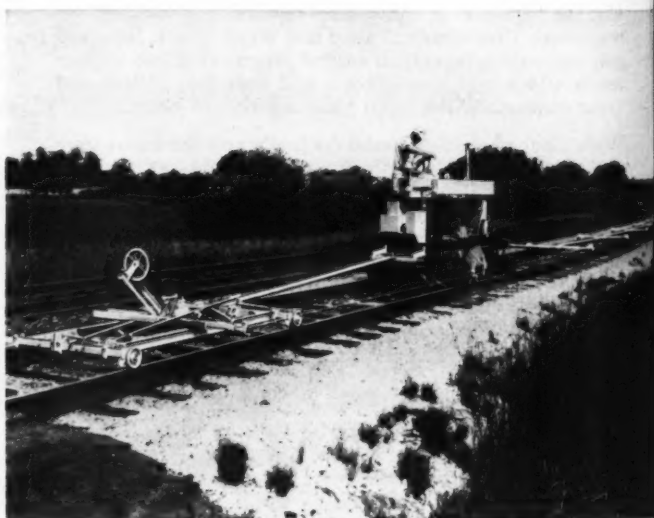
**From NORDBERG . . .**

**source of the major  
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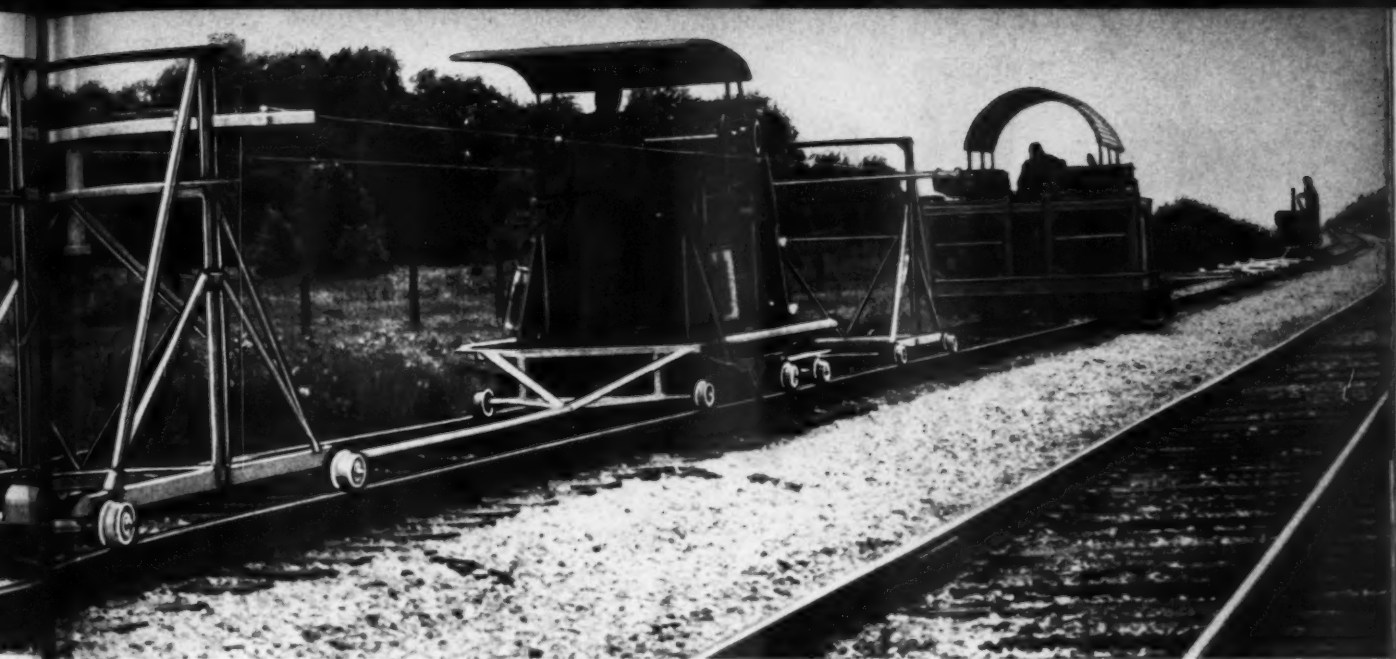
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NORDBERG "TRAK-SWEEPER," used in track raising operations. Unit utilizes a rotating impeller with four radially-mounted heavy rubber blades to level ballast for better distribution ahead of tampers, and to remove excess ballast after tamping.



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PR-10

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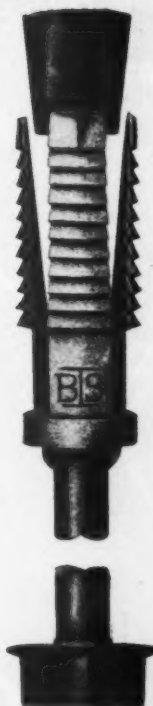
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**3** **TIGHTEN THE ASSEMBLY** with an impact wrench to complete the installation. When tightened in the hole the leaves of Bethlehem's Type "C" expansion shell expand in four directions to lock the bolt securely in place.

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# Railroad problems and prospects

- Where railroads stand today
- How the future shapes up
- What the M/W man can do

By **B. R. Meyers**, chief engineer, Chicago & North Western

● At the end of World War II, the railroads carried approximately 68 per cent of all inter-city freight in the United States. Next came the inland waterway carriers on the Great Lakes and our rivers and canals hauling approximately 14 per cent, then pipelines with 12 per cent. Motor trucks ran a poor fourth by moving about 6 per cent of all inter-city goods.

We have been losing ground steadily ever since. *In not a single year since World War II has our industry been able to capture a greater share of America's total inter-city freight business than we had the year before!* For while our volume has remained rather constant through the intervening years, our slice of the entire inter-city "pie" has grown smaller each year as the pie itself has increased in size.

Total inter-city ton-miles, the only accurate yardstick to measure transportation of goods, has actually increased in this country by about one-third from the first post-war year, 1946, to the present time. In other words, we just haven't shared in our country's booming growth! We're still handling a lot of freight business, but *no more* than we handled, for example, in 1950. The result has been that our share of the total inter-city volume has now declined to approximately 45 per cent.

It is this share that AAR economists have estimated may drop to only 25 per cent by 1970 unless trends are reversed.

The motor truck, of course, has now moved into second place in the

competitive race. Where trucks carried only 6 per cent 15 years ago, they now account for about 22 per cent of inter-city freight. Pipelines rank next with a jump from 12 per cent in 1945 to approximately 18 per cent at present. Inland waterway carriers have increased their volume only slightly during this period, with most of the increase attributable to barges on our rivers and canals.

Now let's explore what our dwindling share of the total inter-city freight "pie" really means — in terms of the entire railway industry, and in terms of our own function within that industry. For certainly it is understatement to say that something is wrong.

## What the railroad industry is

It has been said too often that engineers think that railroads are being operated so they can build tracks and bridges; that operating people think railroads are here so they can run trains. It is true, I think, that every railroad man trying to do a good job in his particular area can easily lose sight of the whole picture.

I think it's particularly appropriate to maintenance supervisors to repeat an explanation I heard not long ago of what a railroad business really is. Few outsiders have this concept of what we are. It may well give you a new insight into our competitive problems. This is particularly true since the maintenance-of-way man in the railroad industry has no counterpart or opposite number in the business of our competitors.

This appraisal of the railroad situation today was written by an engineer specially for engineering and maintenance-of-way officers. It was presented originally as an address before a meeting of the Northwest Maintenance of Way Club and later before the Maintenance of Way Club of Chicago.

Mr. Meyers first looks squarely at the decline in the relative position of the railroads in the country's transportation picture, and then touches on other "illnesses and infections" of the industry. Finally, he takes a look at future prospects and tells why he is hopeful about them and how M/W men can help.

A railroad is actually four major businesses in one. In the first place, it is a large construction company engaged in the building, maintenance and repair of almost countless structures and bridges, and thousands of miles of track and rights of way. The Chicago & North Western, for example, spends about \$35 million annually on maintenance of fixed property alone. Here's a single multi-million-dollar "business" within a business.

In the second place, a railway is also a very large manufacturing



## Railroad problems and prospects *cont'd*

company engaged in the manufacture and rebuilding of rolling stock, locomotives and related equipment. On the C&NW this, too, is roughly a \$35 million-a-year business — another large "business" within a business.

Third, a railway is also a very large communications company which serves our requirements for both traffic control and other needs for inter-city communication. The North Western, for example, has a larger communications plant than many communication companies in the states we serve. We own and maintain approximately 9,000 miles of circuits for such assorted uses as our new Integrated Data Processing System, called CAR-FAX.

And finally, of course, a railway is what every schoolboy knows it is — a transportation company.

### Why competitors have grown

Now I said a moment ago that our competitors have no counterpart to the maintenance-of-way function; and herein, of course, lies the fundamental physical distinction between the railway and its expanding competitors. For highway and waterway carriers simply do not own or build or maintain the ways over which they operate. They have no problems of traffic control or weather protection along their routes.

Needless to say, this fact has played a key role in their mushrooming prominence as inter-city carriers

of freight in recent years. If your railroad's maintenance-of-way expense was borne by the taxpayers, and you shared in this expense only to the extent of license fees or taxes on fuel, we can only surmise what the railroads would be like today.

The running controversy between the trucks and politicians, of course, is whether the license fee and fuel tax paid by the trucker represent an equitable payment for his commercial use of a public way. Without entering into that controversy at all, I point out to you one important fact. Whether or not the trend in government is now in the direction of more equitable payments by commercial users of public ways, and I think it is, the fact still remains that the highway itself and the waterway itself are not now subject to *property* taxes.

Again, only as an example, North Western's property taxes by state and local governments are now approximately \$8 million a year. All railroads pay such property taxes on every mile of right of way.

In any discussion of taxes, the railroads of this country must keep pounding away on several important and indisputable facts, because the issue becomes confused to citizens and politicians alike when the trucker cries out he's already paying ample and adequate "taxes" in his license fees and fuel tax to help support highway construction and maintenance.

The fact of the matter is, of

course, that the license fee and fuel tax are no more taxes in the true sense than are railroad maintenance-of-way expenses. Even assuming that the trucker may be paying his way, so to speak, for the maintenance of his way, there are no state or local *property* tax assessments on the roadway itself over which he operates. I am speaking of such taxes as railroads pay for schools, local government, fire and police protection, sanitary districts, forest preserve districts, debt service on airport bonds, etc.; the kind of taxes which we all pay on our homes; the kind of taxes which now cost the North Western about \$8 million a year.

Roadways and waterways are simply not subject to such property taxation by state and local governments.

But in addition, and wholly aside from the issue of whether this is right or wrong, the railroads of America estimate that they are now over-taxed to the extent of approximately \$141,000,000 a year in a total of 31 states. In Illinois, for example, railroads estimate their property tax bite is just about double what it should be. Railroad property in this state is still assessed at 100 per cent of valuation. The percentage at which other property is assessed in Illinois is 45.70 per cent.

### Other "lingering illnesses"

I do not wish to imply that property taxes are the railway's principal problem. Our industry has so many lingering illnesses and infections that it is difficult to isolate one from another. One of these, as you know, the up-dating of our internal working rules to meet conditions as they exist in 1961, is now being studied by a Presidential commission.

Take the matter of depreciation. The average write-off period for railroad property as a whole is 40 years. We are required to depreciate the cost of our diesels in 20 to 25 years; our rolling stock in about 25 to 30 years. The trucker is allowed to depreciate his equipment in 7 to 8 years; the airlines depreciate their aircraft in 5 years.

The economics of such emascu-

### Not in business to maintain tracks

"... I think railroad supervisors need constant reminder that railroads are, quite candidly, in business to make money. We are not in business to maintain tracks for the sake of maintaining tracks. If the time should ever come when our revenue business falls below a certain undetermined point, we'll find our tracks will disappear just as fast as inter-city passenger trains are now disappearing from the American scene for lack of any economic justification for keeping them."

***"In my opinion the inherent efficiency of the steel wheel on a steel rail is yet to be fully explored in this country."***



tion of an industry's fight against obsolescence of plant and equipment is not complex or subtle. It is second grade arithmetic!

We have been trying to compete too long in the jungle of cut-throat competition from unregulated transport while wearing a straight-jacket. Is it any wonder that we are losing ground?

America, fortunately, is not responding to the cry from the bleachers of the American Trucking Associations which say, in effect, "Throw the bum out!" Truckers concede, you know, that railroads will probably always be around to handle sand and gravel and perhaps coal and iron ore. You have heard this sort of nonsense before.

It will be up to you and me to prove they are wrong, and that the strength and vigor of a healthy railroad industry in this country will recapture an expanding volume of inter-city commerce for the good of all American industry.

There are unmistakable signs that this will soon happen.

A special study group established by the United States Senate to explore the deteriorating competitive situation of the railroad industry has already made its preliminary report to the Interstate and Foreign Commerce Committee of the Senate. It is referred to as the Doyle report.

Among scores of recommendations and as a first step it is proposed that a federal law be enacted to exempt railroad and pipeline right-of-way property from state taxation over a ten-year period to permit local governments to adjust to the tax loss.

Other recommended legislation is a proposed anti-discrimination tax law which would make unlawful the assessment of property of a common carrier in interstate commerce at a higher ratio to market value than other property subject to the same levy.

To put the railways on the very same basis as highway and waterway carriers in the matter of taxation of way must eventually require complete exemption of all railroad right-of-way taxes by states and local governments. This would not be subsidy — unless we define equality as subsidy.

The so-called "agricultural exemption" written into the Interstate Commerce Act was originally designed to free the farmer from all regulation of the movement of his products from farm to market. The effect of this single exemption has resulted in staggering losses of farm commodities to the railroads. For the for-hire carrier by highway now moves goods into rural areas from our cities, then takes on grain in the country as back-haul cargo to the city to pay his gasoline on the return trip at rates so low we cannot match them.

Merchant truckers — those who buy and sell grain — use this "exemption" privilege to run a profit on grain while moving it into grain markets or feeding areas at transportation costs which may be below his out-of-pocket costs to operate his truck. We can't compete with this. For he has two chances to make a profit — on his grain or his transportation of the grain.

ICC statistics disclose that 90 per cent of the cattle and hogs hauled to public markets in the United States are now by unregulated motor trucks. For reasons which completely escape me, regulation is still stipulated by government on the remaining 10 per cent.

#### What about the future?

And so, what about the future of your industry in this decade of the Sixties?

In my opinion, the inherent efficiency of the steel wheel on a steel rail is yet to be fully explored in this country. Our possibilities are almost limitless through the application of new ideas, new technology. For who can envision the capability of the railroad industry today in rendering low-cost inter-city transport if it is once given those legislative and regulatory reforms it has sought in the past 30 years or more?

You know a railroad can actually appraise and assess the value of its sales department, for example, with the efficiency of the same department of a trucker or barge line. A railroad manager can do the same thing with his accounting department, his legal department, with



The author

In appraising the railroad picture Mr. Mayers, being vice president and chief engineer of a large road, speaks both as a member of management and as an engineer and maintenance man. A graduate of Iowa State college with a Bachelor of Science degree in civil engineering, he was working for the North Western as early as 1918 during summer vacations. Later came a three-year spell of service with the Rock Island as redman and instrumentman. He has been with the North Western continuously since 1929, during which his experience has included service as instrumentman, assistant general bridge inspector, assistant engineer, assistant trainmaster, trainmaster, office engineer at Chicago, assistant to chief engineer, assistant chief engineer and chief engineer. The title of vice president was added two years ago. Mr. Mayers is a past president of the AREA.

equipment costs, with fuel costs, etc. But there just is no valid comparison with maintenance-of-way expense. I was interested in reviewing a study by Harry Murphy, president of the Burlington, reported in *Railway Age* last summer. He broke down the costs of five truck lines and five barge lines now competing with the "Q" to find the relative economy of the three forms of transport.

The transportation ratio to revenues of the truck lines was almost 59 per cent, and for the barge lines almost 52 per cent, compared with 34 per cent for the Burlington — which, incidentally, is a ratio for which the Burlington can be justly proud. Maintenance of equipment expense on the Burlington had a ratio of 14 per cent to revenues, while on the truck lines this was 20 per cent and on the barge lines 18 per cent.

The "Q" paid out property taxes of a little more than five cents on

**"Keep exploring every area of your specific function and work to find new and better ways of doing things."**

## Railroad problems and prospects *cont'd*

every dollar of freight revenue. The truck lines and barge lines each paid out approximately one-half cent in property taxes — just one-tenth of the property taxes paid by the Burlington in proportion to revenues.

### Comparing M/W expenses

But the really interesting comparison was on expense for so-called maintenance of way and structures.

The Burlington paid a little over 12 cents out of every dollar of revenue for maintenance of way and structures. The trucks paid out .96 cents, or less than a penny. The barge lines shelled out a paltry .58 cents, a little more than one-half of a penny! Burlington paid more than 12 times the truck payments and more than 20 times the barge payments for such expense. For trucks and barges this expense represented only their costs for terminal facilities for they have no maintenance-of-way expense, as such.

But then Harry Murphy included their license fees, fuel taxes, etc., on the theory that they are used for way maintenance, only to find his railroad still pays more than one and one-half times the truck average, and the barge comparison remained unchanged.

Let no one convince you of the growing myth that trucks and barges are America's truly "low cost" forms of inter-city transport. The analysis made by the Burlington pointed up that where *no government outlays are involved* — in maintenance of equipment, transportation, traffic and general expense ratios — railroad efficiency is head and shoulders above our competitors. We can only guess how much more efficient we could become when full equality is finally accorded to us to compete on equal terms.

Until that time comes, let's never lose sight of the fact that most of the deficiencies and competitive disadvantages we now have are man-made. And what man makes, he can also unmake — whether it be unfair regulation, unfair taxation, or outmoded work rules designed only to "make work" where there is no work.

In my opinion, the present jungle warfare of competition in which we are attempting to defend ourselves has served, among other things, to

sharpen our wits. It's kept our brains alive and working. Better methods and mechanization have become bywords in railroading. Automation is becoming our way of life, as indeed, it is in industry generally.

I have no doubt that we can build back our freight traffic volume. We can build steady and expanding railroad employment in the years ahead once labor discovers that this can be done only if we build for the future on sound footings.

Don't let your thinking grow stale. Keep exploring every area of your specific function and work to find new and better ways of doing things. There is a good deal of truth to the old saw: "If you have been doing something the same way for a year or more, chances are *there is now a better way of doing it!*"

The U. S. population today stands at approximately 180 million, an increase of 29 million in the past ten years. By the end of this decade, by 1970, we'll have another 30 million people in our country and 300 million are estimated by the end of this century. Just to feed, clothe and house the additional Americans in this population explosion will require more industrial production and transportation than we can now imagine.

Our opportunities to share in this dynamic population and industrial growth in the years ahead will depend, to a great extent, on legislative and regulatory reforms. You and I, as American citizens, can help to bring about and re-shape such needed legislative and regulatory equality for our industry. We must point out to our shippers and friends their own self-interest in our problems and their solution. It follows that we must do the same thing among our employees at every level.

For the railroad industry which is so much a part of all of our lives can become, I am convinced, one of America's most dynamic growth industries in the short span of this decade. This will happen if you and I are able to convince people everywhere that all of American industry, and every American consumer, will benefit with strong and healthy railroads. The stakes are high, for I believe we can become the most efficient and progressive force in American commerce.

## For brush—

By W. E. Chappell

Professor of Plant Physiology  
Virginia Polytechnic Institute

● Experiments conducted at Virginia Polytechnic Institute since 1955 have been aimed primarily at finding means of controlling brush more effectively. This research has been carried out in both the dormant season and during the summer.

Winter basal treatments using 2,4-D and 2,4,5-T in oil have been in use for many years. The main objection to this type of application is that it is very time-consuming to apply and has not proven practical for use on large areas. Initial experiments in 1956 indicated that much lower concentrations than those normally used for basal applications could be used if applied in a larger volume and applied as a broadcast treatment. These experiments resulted in the development of the Dormant Cane Broadcast method\* of application.

The Dormant Cane Broadcast method involves wetting all the above-ground portions of stems with a mixture containing 6 lb of 2,4,5-T or a combination of 2,4-D and 2,4,5-T in 100 gal of No. 2 fuel oil or a similar light oil. Usually, 150-200 gal per acre is sufficient for adequate coverage of most brush. In general, it is more economical and efficient to spray brush before it reaches a height of 6 ft. Brush up to 25-30 ft in height can be killed, but much of the spray solution is wasted or drifts away when attempting to spray brush of that height. Applications can be made any time after the leaves are off in the fall until bud-break in the spring.

Further experiments carried out in 1958, in which only the lower one-third of the stems was sprayed, resulted in as good control for most species as did the overall spray. Certain species, such as the conifers and sweet gum, require complete coverage for adequate control. These experiments also showed that, if a portion of the spray was directed on the soil around the base of root-suckering species, less resprouting

\* Developed at the Virginia Agricultural Experiment Station

# What kind of treatment?

Some species of brush are difficult to kill. The Virginia Polytechnic Institute has been experimenting with application methods and formulations to obtain better control of these species. In this article, which is adapted from a paper presented before the recent AREA meeting, Prof. Chappell outlines these experiments and discusses the findings resulting from them.



SMALL PUMP, mounted on a push car, was used to make the dormant spray applications for the experiments.

would occur than where an overall spray was used. These findings resulted in a suggested modification of the Dormant Cane Broadcast method which is now referred to as the Broadcast Basal and Soil (BBS) method.

## Advantages of dormant spraying

In the Dormant Cane Broadcast method all species can be killed to the ground level if adequate materials are applied to insure good coverage. Certain species, such as sassafras and black locust, often resprout the second year after application, but these same species are also difficult to kill when the spray is applied in the summer. Some of the main advantages of the dormant application are:

- (1) Less likelihood of crop damage.
- (2) Less volume of carrier needed.
- (3) Spraying can be done during normally slack seasons.
- (4) Much less "brownout" than when summer applications are made.

Other chemicals that have been used in the dormant experiments and show some promise for brush control are Fenuron and 2,3,6-trichlorobenzoic acid. Fenuron, which is usually obtainable in 25-per cent pelleted material, will kill most all species but it cannot be used near desirable vegetation without running the risk of some damage. All soluble 2,3,6-trichlorobenzoic, when applied as a dormant cane broadcast, has resulted in a better control of resprouting in black locust and sassafras than does 2,4,5-T. The Fenuron and benzoic materials will probably be more expensive than will the 2,4,5-T. The dormant spray applications referred to above were applied experimentally with a small pump mounted on a push car.

Most experiments now underway

for summer applications are designed primarily for finding materials and techniques that will control the more resistant species, such as sassafras, black locust and sumac. Most brush on right of ways is currently sprayed with a mixture of 2,4-D and 2,4,5-T esters or amines, using 4 to 6 lb of active ingredient in 100 gal of water. Often, when esters are used, the addition of 10-per cent oil to the mixture results in better control, especially when applied late in the season. Several newer chemicals and mixtures of chemicals have been tried in experiments during the last three years. Some of the more promising materials are a mixture of 2,3,6-trichlorobenzoic acid (TBA) and liquid amitrol (Amitrol-T) at a rate of 4 lb each per 100 gal of water. This mixture is especially effective against black locust and sumac.

The amitrol benzoic mixture is being suggested for areas that have a large percentage of these resistant species. There is usually a build-up of these species in areas that have received several applications of 2,4-D and 2,4,5-T which have killed out the more susceptible species of brush. Amitrol alone will kill ash, black locust and sumac. Rates of 4 to 6 lb of Amitrol T in 100 gal of water are sufficient. This material does not result in the drift and volatility damage that is associated with 2,4-D and 2,4,5-T.

One of the most significant developments in summer application has been the introduction of invert emulsions of 2,4-D and 2,4,5-T. Upon mixing, these materials form a very heavy mayonnaise-like emulsion which produces little or no drift when applied to brush. This material is not only much safer to use around susceptible crops, but it ap-

parently is more effective in controlling sassafras, black locust and sumac than when applied as conventional water sprays in the summer, or with the Dormant Cane Broadcast method in winter. Best results have been obtained when this material has been applied in a relative high concentration and low volume.

Mixtures of 6 to 8 lb of 2,4-D and 2,4,5-T in 24 gal of mixture have proven quite effective when applied with a helicopter. These low volumes have not been tried effectively with ground or with on-track equipment. The small amounts of material that are deposited on the leaves of the brush are apparently taken up very slowly and are translocated into roots of plants before the tops are completely dead. The usual brownout following summer spraying does not occur for two or three weeks after spraying.

Fenuron has proven effective in the summer as well as in the dormant season of brush control. This material appears to be best suited for cleaning up areas that have been thinned out by previous sprayings. It should not be used near desirable vegetation, especially large trees.

## Summary

Dormant-season applications of 2,4-D and 2,4,5-T in oil should be made during the period November 1-April 1. Snow cover up to 10 in has not affected results. The spray should contain 6 lb of 2,4-D-2,4,5-T acid in 100 gal of No. 2 fuel oil or lighter oil. The spray should be applied at 100 to 150 psi and should

(Continued on page 60)



# Prefab freighthouse on Santa Fe is 1/3 mile long

New rail-truck freight terminal recently placed in operation at Kansas City has two underfloor towing systems that may be joined by a special switch. House tracks are completely enclosed. Aluminized steel is used for roofing and galvanized steel for side walls.



INTERIOR of freighthouse features wide working platforms, bright general illumination, special pull-down lights for use in cars and two-way speaker communication.

● As part of a long-range program aimed at giving the kind of service that will attract new business the Santa Fe recently placed in service a new rail-truck freight terminal at Kansas City, Kan.

In every respect the facility reflects the most modern concepts of design and construction. It is, in addition, of unusual size, and incorporates a number of novel features.

The new terminal took approximately two years to build. It combines under one roof the operations of the road's division forces, the freighthouse in the Argentine district and the truck freight depot of

the Santa Fe's Trail Transportation Company. An adjoining structure provides dock space and offices for the National Carloading Company.

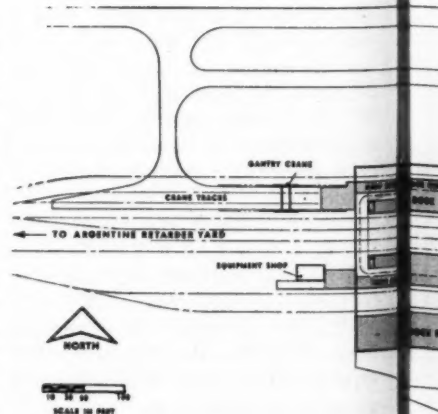
The terminal, located in the Turner Industrial District adjacent to the road's Argentine yard, is designed to speed movement of local and cross-country freight.

The main structure is the Armco prefabricated-metal freighthouse, 1,744 ft long, with a roof of aluminized steel and siding of galvanized steel. Its easterly portion, 80 ft wide by 782 ft long, serves Trail Transportation with 140 truck tail-board spottings. Its westerly portion,

168 ft by 962 ft, has dock space for 102 freight cars and is occupied by the Santa Fe freighthouse force. At the southwest corner is a 60-ft by 523-ft adjunct, used by National Carloading, which is served by a single track providing dock space for 11 freight cars. The entire freighthouse will accommodate 231 truck trailers.

Seven tracks enter the terminal from the west, including the one serving National Carloading. Four of the six tracks serving the railroad portion of the freighthouse bisect the building to provide two freight platforms. Two tracks are on the opposite sides of these platforms and the third serves a third platform.

Two underfloor towing systems have been installed, one serving the railroad portion and the other the truck-dock platform of Trail Transportation. A new type of switch between the two conveyor systems makes it possible to transfer platform trucks from one to the other, or to operate both systems as one







for moving merchandise the entire length of the freighthouse.

Offices for the truck-dock operation are located in a one-story building, 48 ft by 85 ft in size, in the north portion of the truck section. It is of concrete-block bearing-wall construction with a facing of brick and insulated-steel panels.

Dock offices for the rail operation are in a one-story building, 28 ft by 52 ft in size, located off the south platform and adjacent to the east end of the National Carloading adjunct.

The three-story main office building, approximately in the center on the north side of the freighthouse, is 81 ft wide by 146 ft long. It is of reinforced-concrete construction faced with brick and porcelain-enameled, steel-panel window walls. It is served by a passenger elevator.

The basement of the main office building houses heating and air-conditioning equipment, lunch and assembly room, file-storage space and food-vending machines. The railroad

freight agent's offices are on the first floor. The second floor has offices for the truck-division superintendent, local agent, telegraph, PBX and credit union. Offices of the division rail forces are on the third floor, as are those of the district manager for National Carloading.

A special card-mechanization program, designed especially for the new Argentine facility after five years of study, has been installed in the main office building. The purpose of this operation is to improve service by furnishing faster and more up-to-date information on car and train movements through Argentine yard.

A 25-ton-capacity gantry crane has been erected at the west end and outside the freighthouse for handling heavy loads to and from cars. It spans two tracks and a storage platform at the freighthouse floor level and travels 164 ft.

Pneumatic tubes and speaker systems have been installed for communication both throughout the

**CONSTRUCTED of prefabricated metal, this facility provides 231 truck spottings and accommodates 113 freight cars.**

freighthouse and offices and to other facilities throughout Argentine yard.

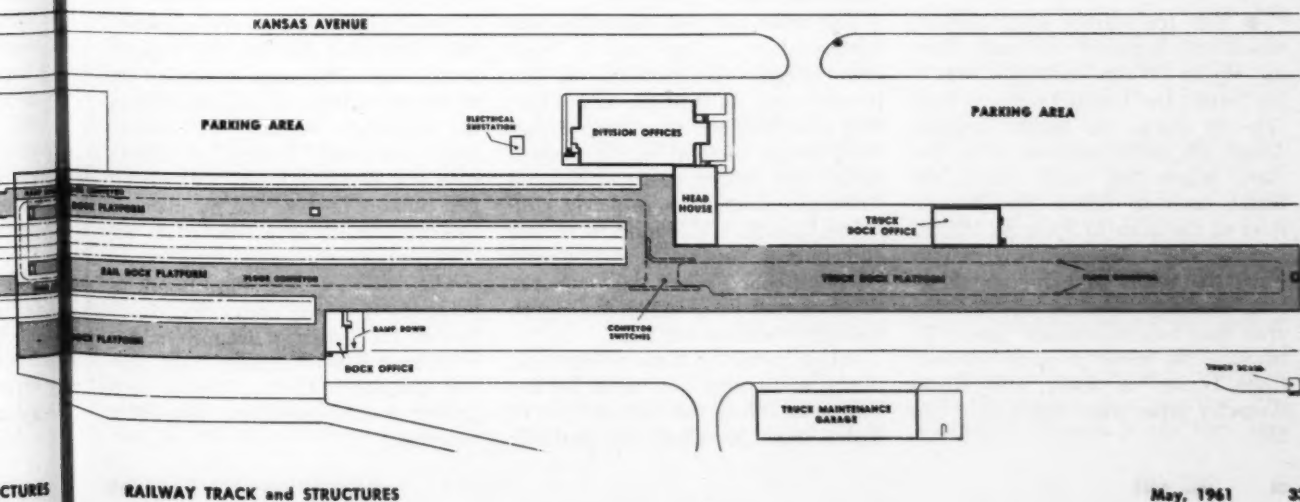
A 50-ft-wide apron of concrete surrounds the freighthouse for truck-trailer parking. Other parking space is paved with asphaltic concrete or sealed crushed rock.

A truck garage was constructed south of the freighthouse for maintaining and servicing truck tractors and trailers. The garage is a prefabricated insulated metal building, 60 ft by 200 ft, and is heated.

The area occupied by all the new buildings totals 330,532 sq ft.

A new "trailer-on-flat-car" facility is approximately one-half mile west of the freighthouse. This is capable of handling ten 88-ft flat cars and up to 20 trailers.

**FREIGHTHOUSE has two underfloor conveyor systems, one serving the railroad section and the other the truck section.**



RAILWAY TRACK and STRUCTURES

**HUGE FILL**, being constructed to carry UP tracks across the Snake River valley, will form two man-made lakes when Ice Harbor dam is completed. Two Multi-Plate culverts are installed to equalize water pressure. Lower one, 10 ft in diameter, is covered by 70 ft of fill and upper one, 18 ft in diameter, is covered by 17 ft of material.

**BACKFILLING** in the vicinity of the 18-ft culvert was carried out by heavy earthmoving machines after horizontal and vertical strutting was placed inside the pipe. During normal flood stage, water will be 4 or 5 ft deep through this pipe, permitting small boats to pass from one lake to the other.



● The Ice Harbor Dam project, which will impound the Snake river in Walla Walla county, Wash., has forced the Union Pacific to relocate its tracks on higher ground. About 10 miles upriver from the dam, where the tracks cross the Snake river to follow the Palouse river on the route to Spokane, Wash., a huge fill is being constructed to carry the tracks at a higher elevation, thereby dividing the flooded area into two man-made lakes. To equalize the water pressure between these bodies of water, two large-diameter pipes were installed in this fill.

## Large pipes equalize lake levels

Both of these culverts are fabricated from Multi-Plate corrugated metal. One, 10 ft in diameter, is fabricated from 1-gauge galvanized steel. It is covered by 70 ft of rock and earth and is 360 ft long. Pending flooding of the land, this culvert is being used as a cattlepass.

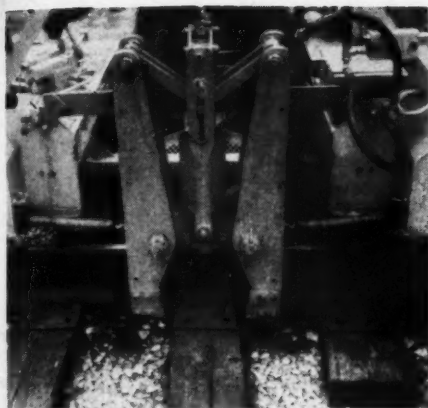
The other, 18 ft in diameter, was fabricated in a shop with a 5-per cent ellipse. As installed, it lies beneath only 17 ft of fill. This structure was designed by Armco's ring-compression method which permits larger and lighter corrugated-metal structures than were formerly considered possible. The purpose of this culvert is to serve as a passageway for small boats. When the water rises to normal flood stage, the depth through it will be 4 or 5 ft.

When installing these culverts, no lifting equipment was used by the contractor. Once the bottom rows of plates were installed, the partially

completed structures were rolled on one side and more rows added. This permitted most of the pipe assembly to be done at ground level. Top plates were installed by workmen from scaffolding built on the bed of a truck which was driven inside the structures.

Both horizontal and vertical strutting were used for the 18-ft pipe to permit the contractor to make use of heavy earthmoving equipment in the immediate vicinity. This equipment included Caterpillar DW21 scrapers, D-9 bulldozers and Michigan tractor-shovels. The fill material was moistened as necessary to secure proper compaction.

The railroad relocation work is being carried out under the direction of the Corps of Engineers. Peter Kiewit Sons Company is the general contractor. The Ice Harbor Dam project is scheduled for completion this year.



**TWO PAIRS** of squeeze arms act on both ends of the boxed anchors simultaneously.



**ANCHOR-TIGHT** attachment is lowered hydraulically. Guide bars keep assembly in proper alignment with rail.

## Tests machine for resetting rail anchors

Five miles west of Galesburg, Ill., in continuous-rail territory, the Santa Fe has established a test section of track in its westbound main. Main purpose of the test section, which is about five miles long, is to determine the practicability of resetting boxed rail anchors by squeezing them against the tie mechanically. The device used for this purpose was recently developed as an accessory for use with a hydraulic anchor applicator.

● Where rail anchors are not in contact with the tie is it sound practice to shift them on the base of the rail as necessary to establish such contact?

Recognizing that wide variations of opinion exist on this question the Santa Fe has undertaken a project which it is hoped will provide some definite answers. The project involves the creation of a test section of track in which Santa Fe engineers will be able to observe the performance of rail anchors that have been moved on the base of the rail to bring them into contact with the tie. For moving the anchors the railroad used a Racine Anchor-Fast applicator in which the

applicator head had been replaced by a newly developed device that squeezes the anchors against the ties.

Here's the background of the development:

The Santa Fe has in service more than 1,200 track-miles of continuous welded rail. Such rail requires more anchors than conventional jointed rail. They are needed to resist movement due to temperature stresses and as protection against a wide gap occurring in the intermediate portions in the event of a rail break.

The anchor pattern adopted by the Santa Fe calls for box-anchoring every other tie in the entire string

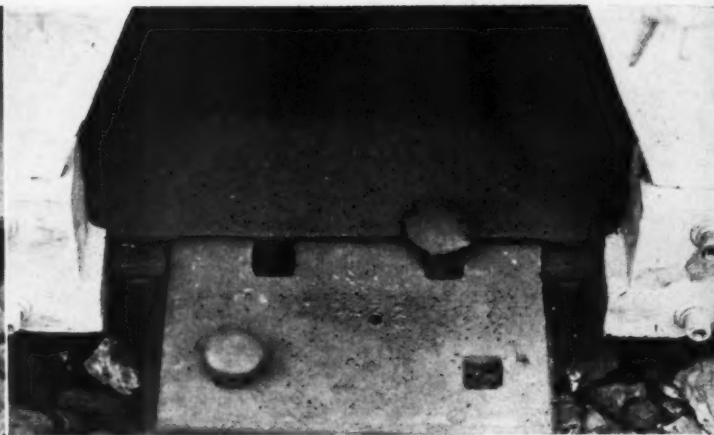
and, for the last five rail lengths at each end, the application of an additional anchor on the unboxed ties to resist pull-aparts. With this pattern, each of the standard 1,440-ft strings has 1,008 anchors applied to it.

In the days when welded rail was first being laid on the Santa Fe the anchors were applied by hand. More recently mechanical applicators that place the anchors firmly against the ties have been used for this purpose. In observing welded rail in service Santa Fe track men have noted that a large number of hand-applied anchors, particularly those applied on boxed ties opposite to the direction of the prevailing traffic, have not been in close contact with the tie. As a consequence measures for correcting this situation came under consideration.

While at the present time the road is concentrating on this problem as it applies to welded rail it is also recognized that the same problem is encountered on jointed track.

To change the position of an anchor usual procedure calls for the removal and resetting of the anchor. Where the distance an anchor must be moved is  $\frac{3}{4}$  in or more, trackmen normally follow this practice. But where this distance is less, they have





A PRESSURE of as much as 50,000 lb can be brought to bear against the anchor ends by the wear plates of the squeezing arms.

## Tests machine for resetting anchors *cont'd*

a tendency to use a maul for striking the anchor first on one side and then the other.

Because the removal and replacement of anchors on a large scale by hand would require more manpower than was available on the Santa Fe, Francis H. Smith, an assistant engineer on the road, conceived the idea of developing a machine for squeezing the hand-applied anchors of the boxed ties against the tie. Since the

road already possessed several of Racine Hydraulics' Anchor-Fast applicators, he felt that a squeezing device could be designed to replace the standard applicator-arm assembly of this unit, thereby converting it into a dual-purpose machine. Acting on this suggestion, Racine engineers developed an accessory device, called the Anchor-Tight, to perform the function.

The development of this device raised a number of questions. Would one or both anchors move? Would the tie be damaged or moved out of position? Would a relocated anchor lose some of its holding power? Would the rail base be damaged? Once moved, would the reset anchor stay in position?

To develop answers to these questions, the road decided to establish a test section of track where conditions could be checked at stated intervals. It also decided to have this test broadened to include a change in its standard anchor pattern, i.e., to move the single anchors at the ends of the strings to form pairs with others and thus have all anchors in a boxed position.

The existing anchors of the test track had been applied by hand when the rail was laid. In general, the positions of the anchors with respect to the ties would be considered normal, resulting from "fair to good" application. However, while the anchors of the boxed ties were tight against the ties for resisting rail movement in the direction of westbound traffic, the ones on the opposite sides were frequently found

from  $\frac{1}{4}$  to  $\frac{1}{2}$  in away from the ties. Some were even farther away.

For resetting the anchors a Racine Anchor-Fast machine was used in which the applicator arm had been replaced with the squeezing device. When the machine was working in areas where single anchors had to be removed and replaced to pair up with others, two men went ahead to do this work.

The pressure on the hydraulic pump of the machine was set originally at 600 psi. This produced a force of 12,000 lb on the anchors. The pressure was then adjusted to 800 psi to produce a 16,000-lb force on the anchors. The final adjustment was 750 psi, which exerted a force of 15,000 lb on the anchors. Mr. Smith expressed satisfaction with the results obtained at this pressure.

It was noted that, when the wear plates of the squeezing arms first engaged the rail anchors, the full pressure of 750 psi was developed at the hydraulic pump. As soon as one of the anchors began to move, however, the pressure dropped to 250 psi. However, it built up rapidly again to full pressure when both anchors had been brought tightly against the tie.

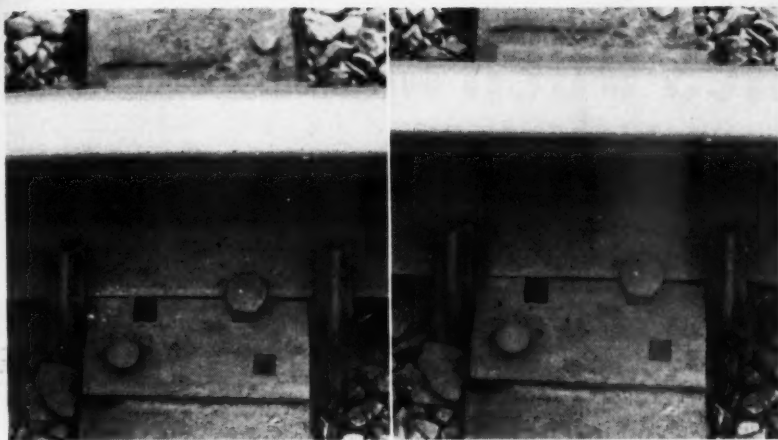
Relatively little disturbance to the ties was noted as the result of this work. Occasionally, in the intermediate portions of the strings, an anchor, having less holding power than the one with which it was matched, would move far enough to engage a tie and would move it  $\frac{1}{8}$  to  $\frac{1}{4}$  in.

On the first day the machine tightened the boxed anchors on a little more than four strings, a total of 4,320 anchors, in 5 hr 35 min of



PATTERN was revised at ends of strings to place all anchors in a boxed position.





**BEFORE AND AFTER** views showing how anchor at right was moved against the tie.

on-track time. This rate was increased as the operator became more familiar with the controls. A foreman, a machine operator and four trackmen, two of whom were flagmen, were used for this work.

#### Details of test section

The test site is located about five miles west of Galesburg, Ill., on the westbound main of the road's double-track line between Chicago and Kansas City, Mo. These tracks are operated and signaled for traffic reversal with automatic train control. The test section has 136-lb RE section continuous-welded rail laid in August 1959 on 8-in by 14-in double-shoulder tie plates. It is restrained by Improved Fair rail anchors applied by hand in accordance with the road's standard pattern.

The test involves three sets of anchor conditions. One includes the Santa Fe's present anchorage pattern for continuous welded rail with the boxed anchors tightened. For this condition, the Anchor-Tight machine moved all anchors at the boxed ties into close contact with the tie, but did not touch the pull-apart anchors at alternate ties at the ends of the strings.

The second condition called for the removal of every other pull-apart anchor at the string ends and pairing it with the alternate one. This resulted in three cross-ties being box-anchored consecutively with one unanchored tie between each group. Every pair of box anchors was then tightened.

Under the third condition the existing anchors were neither

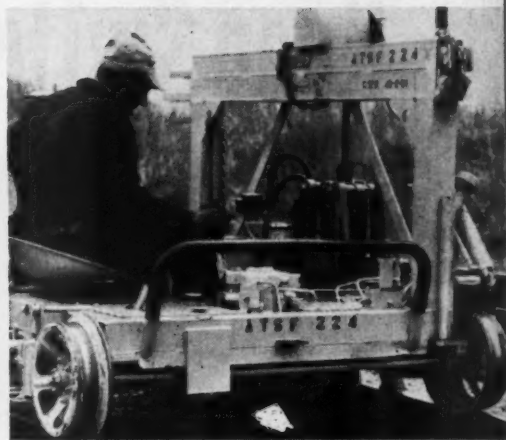
changed or tightened. This track serves as the yardstick by which the other two anchor conditions can be evaluated.

In setting up this test, 12 strings were devoted to each of the three anchor conditions. They are so established between the two running rails that the performance of three strings of each anchor condition can be compared directly with three strings of each condition set up on the opposite running rail. With this plan, it is felt that the effect of such factors as the amount of traffic, grades and curves will be equalized.

The work of setting up the test section was progressed for three strings on one running rail, then three strings on the opposite running rail. As the work on one rail was brought abreast of the work on the other running rail, the engineering department established permanent check points so that the movement of the ends of the strings can be compared later.

Center-punched iron pins, 42 in long, were driven on each side of the right of way approximately at right angles to the joints connecting the strings. With a transit set over one pin and sighted on the other, marks were punched on the same line of sight on the sides of the ball of the running rails. Also, the joint gaps between the strings and the rail temperatures were noted and recorded for future reference.

It is the intention to recheck these points 30 days after the initial work, then every two or three months thereafter. Comparisons will then develop information on the movements of the various strings.



**GUARD** under machine (indicated by arrow) protects operator in the event an anchor should spring off the rail.

#### Can apply 50,000 lb pressure

The device used on the Santa Fe for re-setting the anchors in its test track near Galesburg was developed as an accessory for use with the self-propelled Anchor-Fast anchor applicator as manufactured by Racine Hydraulics & Machinery, Inc., Racine, Wis. The attachment, known as the Anchor-Tight, temporarily replaces the applicator-arm assembly of the parent machine.

The purpose of the device is to apply a squeezing action to the two anchors at boxed ties to bring them into tight contact with the tie. It derives its power from the variable-volume, vane-type hydraulic pump on the parent machine. It is comprised of two pairs of opposing squeezing arms, one on each side of the rail, a series of levers and a hydraulic ram. Through compound leverage, it has a 2-to-1 power ratio between the wear plates at the bottoms of the squeezing arms and the hydraulic ram. For example, 5,000 psi at the ram produces 10,000 psi on the wear plates. The manufacturer states that a maximum pressure of 50,000 lb can be applied for the boxing operation. The wear plates, which engage the rail anchors on each side of the ties, are fabricated of hardened tool steel and are replaceable.

The squeezer assembly is raised and lowered by the same hydraulic ram and chain as is used for the applicator-arm assembly. Guide bars keep the squeezer assembly in such a position that, when lowered, the wear plates fall just clear of and parallel to the base of the rail.

The lower portion of the squeezer assembly is connected at each end by springs to the frame of the chassis of the parent machine. This type of connection permits it to operate independently without any strain being exerted on the chassis frame.

Three control levers are provided on the Anchor-Tight machine. One is for propelling the machine. Another raises and lowers the squeezer assembly. The third activates the squeezer arms.

For normal anchor tightening, the operator pushes the propulsion lever in the direction he wishes the machine to travel and stops it when the squeezer assembly is approximately over the boxed tie. Although the machine is equipped with a hand brake, it is not necessary to use this when stopping the unit because the propulsion lever can be partially reversed for making a quick stop without any damage to the mechanism.

# Keep Switches Open during winter's worst storms

# Q AND C

## ELECTRIC SNOW MELTERS



**Ballast type**



**Tubular type**



Compare the savings in time, money and convenience with Q and C Electric Snow Melters over other methods. Once installed, they can be centrally controlled and ready for immediate action at the first flurry of snow or freezing rain. Attention-free and weather-proof, they surpass all other clearing methods.

BALLAST units are placed in a series, loosely on the ballast under the switch points, close to base of the rail. They are furnished for either 47 or 55 volts, AC or DC, and can be placed on 110, 220, 440 or 660 volt circuits. Each unit consumes 1000 watts, and attains a temperature of 284 degrees in fifteen minutes with a maximum of 650 degrees in approximately an hour.

TUBULAR heaters are quickly and permanently attached to stock rails, between movable point and rail, assuring efficient placement of the heated zone. Heater element is enclosed in seamless stainless steel tubing, with brass terminal housing and moisture-proof fittings. Available for AC or DC. Insulated cable lead ten feet long furnished, unless otherwise requested. Wattage, voltage and length are supplied to your specifications.

Anyway you look at it, Q and C Electric Snow Melters are your dependable, winter-wise solution for snow-free switches.

Plan now . . . drop a line for our brochure giving information necessary for a complete Q and C Electric Snow Melter Installation.

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## A-W crane loads truck vans and rail cars without hand-shoving!

Save hand labor and you automatically save time and money. And you can do it by using an Austin-Western hydraulic crane for countless materials handling jobs.

Hydraulically controlled boom extends and retracts to reach into tight spots with low clearances to eliminate shoving loads into place by hand; works in continuous full circle. All-wheel steering means extreme

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Available in 5 models. Capacities to 11 tons. Self-propelled and truck or stationary mounting. Write us today for more information.

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In Sweet's

Plant Engineering File

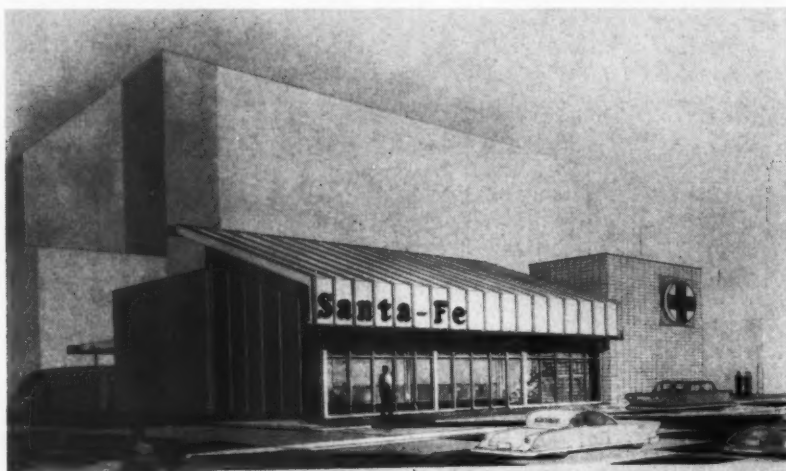
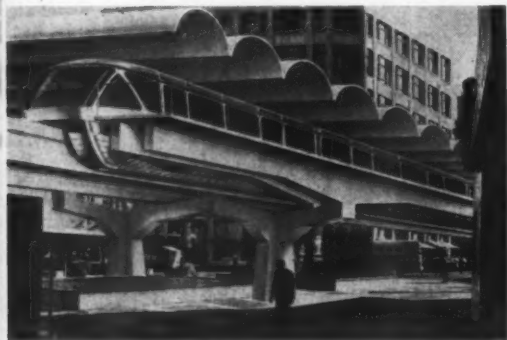


**Austin-Western**  
Construction Equipment Division  
AURORA, ILLINOIS



### Seattle to have monorail system

Visitors to the Century 21 Exposition at Seattle will board monorail trains at the downtown terminal (below) and be whisked out to the exposition grounds in four-car trains on 95-second schedules. The mile-long route will have two tracks with one train each. The trains are expected to be capable of moving 10,000 passengers per hour. Prestressed-concrete beams will support the tracks at an average clearance of 21 ft above pavements.



## News briefs in pictures ...

### Modern station and office

Concrete blocks, steel beams and large expanses of plate glass were used to create a spacious atmosphere in Santa Fe's newest facility. Placed in operation in March at Oakland, Calif., the new Transportation Center (above) provides passenger and baggage-handling accommodations on the main floor and houses division offices for freight and passenger agents and a ticket agent on the second floor.

### Mexico's newest railroad

Construction is now nearing completion on the Chihuahua & Pacific Railroad which runs 570 miles southwest from Ojinaga, Mex. (across the Rio Grande from Presidio, Tex.) to the town of Topolobampo on the Gulf of California. Here, men are laying rail by hand on mixed-type concrete ties after the rail-laying machine had broken down.







High flotation tires allow unit to mount/leave rail anywhere. (Optional)



NEW JR-300 CONVERSION UNIT on the International Scout four-wheel drive pickup.

## **NOW!** You can have a *Rail Road* CONVERSION UNIT

TRAVELS OVER RAIL OR ROAD

for everything from "COMPACTS" to BIG-BOYS!

### MEET THE "JR-300"

Another major design innovation! A specially equipped, minimum-weight conversion unit for vehicles under 4800# GVW. Lightweight, only 340#, this rugged new JR-300 unit fits many 1961 vehicles including the Econoline series, FC-150 Jeeps, and most "compact" station wagons.

Many outstanding features are built into the JR-300, including TORSION BAR SUSPENSION, THREE-PIECE WHEELS to eliminate 100# of weight, PERMANENTLY LUBRICATED BEARINGS, new MOLDED, REPLACEABLE RUBBER WHEEL TREADS and improved INSULATION. "Assembly Line" pricing saves up to \$500.



Regular unit mounted on 6-passenger pickup.

**THE REGULAR UNIT . . .** An experience-proved answer to today's demand for an economical, efficient rail-highway inspection vehicle. When installed on station wagons, sedans or light trucks up to 9000# GVW, this versatile unit permits safe, speedy operation over rail trackage.



Big-Boy Unit mounted on cab-over truck.

**THE BIG BOY . . .** This husky hydraulic unit provides on-track/off-track operation for vehicles up to 45,000# GVW. Eight self-steering wheels with bogey action provide finest performance on uneven track, increase on-rail safety, eliminate curve binding and vehicle strain. A real workhorse!

- Rail-Road Conversion Units are now available for the vehicle of your choice
- —sedan, station wagon, small or large truck. You may order a unit to fit your vehicle and install it in your shops . . .
- or let us install it for you on your choice of vehicle and accessories.
- Attractive LEASING TERMS available.

*W.T. Cox Company*

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(2043)



*Reversible plow for . . .*

### **Ballast regulator**

THE MODEL 4FW-A heavy-duty Ballast Regulator is available equipped with a new heavy-duty, reversible V-type plow. The plow is designed to move ballast in or out or to transfer ballast across the track in either direction. The manufacturer points out that these operations are accomplished by one easily adjusted package. In addition, the machine is equipped with heavy-duty, reversible ballast regulating and scarifying wings and, as in previous models, the same automotive-type drive and braking components. Hydraulic vertical control of the wings is available as optional equipment. *Kershaw Manufacturing Company, Dept. RTS, 2205 West Fairview Ave., Montgomery 1, Ala.*

(Circle 145 on TIME-SAVER card)



*Flanged wheels for . . .*

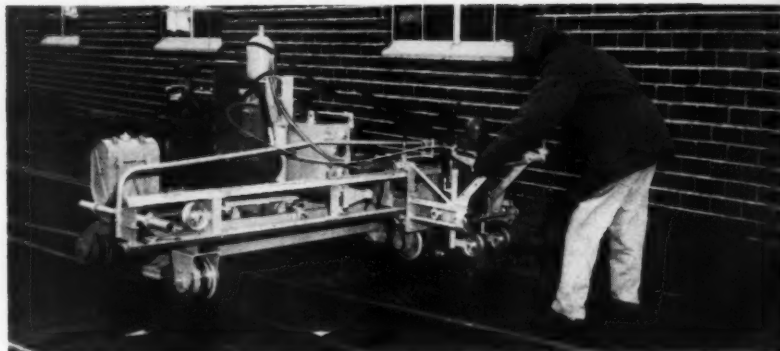
### **Rubber-tired cranes**

DESIGNED specifically for Harnischfeger "P&H" cranes with 12½ and 15-ton lifting capacities, the new "railroad adapter" enables rubber-tired cranes to operate either on highway or railroad tracks. The adapter consists of four flanged steel wheels which are mechanically raised or lowered. To prepare for track operation, the crane is driven into position over the tracks at any grade crossing and the two front flanged wheels lowered onto the rails by means of a hand crank. The crank is turned until the tires of the crane are free of the rails. The two flanged wheels at the rear of the crane are lowered in a similar manner except that the rear tires are lifted only enough to place part of the weight of the crane on the flanged wheels. The rear rubber

tires remain in contact with the rails and are used to propel the crane along the track. The manufacturer states that there is no excessive wear or damage to the

rubber tires, even at speeds of 35 mph. *Harnischfeger Corporation, Dept. RTS, Milwaukee 46, Wis.*

(Circle 146 on TIME-SAVER card)



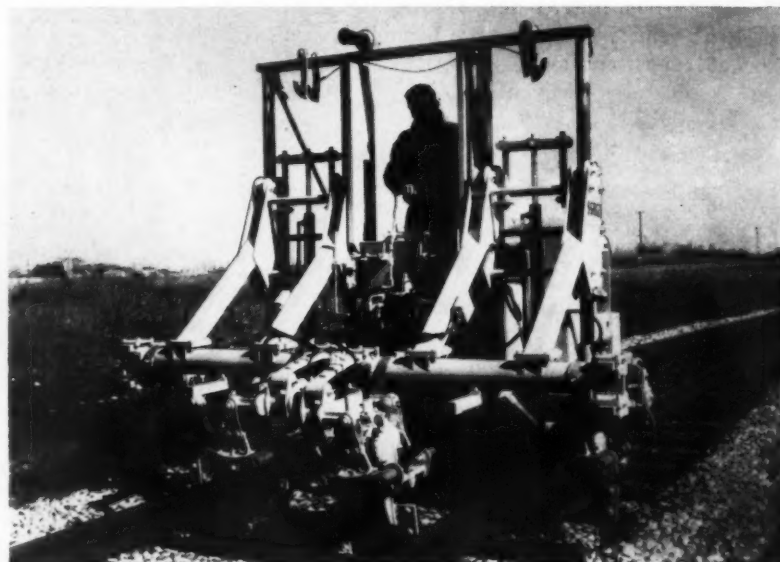
*For tie and rail gangs . . .*

### **Spike driver**

FAIRMONT has announced the availability of its W100 Series A hydraulic spike driver. The new machine is equipped with a driving assembly that rolls from one

side to the other on a transverse track so that spikes can be driven for both rails. This feature is stated to make it adaptable to both tie and rail gangs. Setoff rails are available as optional equipment. *Fairmont Railway Motors, Inc., Dept. RTS, Fairmont, Minn.*

(Circle 147 on TIME-SAVER card)



*Two new models . . .*

### **Utility tampers**

TWO "Utility" tampers have been added to the Jackson line of tie tampers. The manufacturer states that the new tampers were designed to perform a wide variety of tamping jobs where larger production tampers either are not indicated or not

available. One of the new models is known as the JRMT utility tamper. It is equipped with a diesel engine, large generator and four vibratory tamping units of the Track-Maintainer type. The manufacturer states that the JRMT can be used in any kind and condition of ballast and for all mainline and secondary-line work, including smoothing, spot tamping and high lifts.

(Please turn to page 44)



# UNIT

## RAIL ANCHORS

*More RUGGED in every respect*

### No Other Anchor Offers All These Advantages!

- **Unsurpassed Holding Power**

No anchor has more holding power than the UNIT and few are its equal.

- **Most Economical**

Low in first cost, UNIT gives you more for your money.

- **Greatest Reapplication Value**

UNIT anchors can be reapplied repeatedly with minimum loss of holding power.

- **Most Effective on Secondhand Rail**

Because of its spring-type design the UNIT anchor automatically compensates for base wear and corrosion.

- **Anchorage With Safety**

With UNIT Rail Anchors there's less chance of damage to rail and/or the anchors in event of derailed wheels.

- **Best for Machine Application**

The flat, wide section assures uniform application against ties, yet gives ample contact area for applicator shoe under all conditions.

## UNIT RAIL ANCHOR CORPORATION

6301 Butler Street, Pittsburgh 1, Pa.

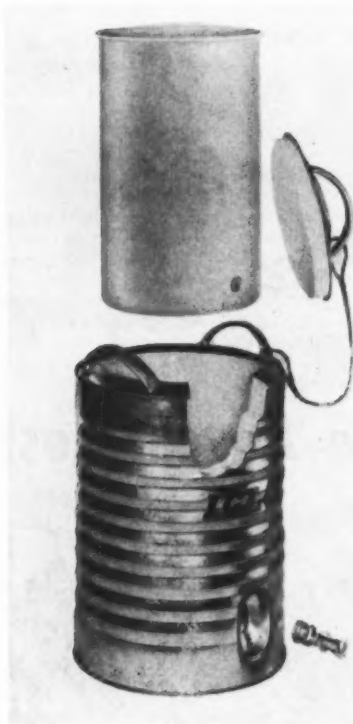
Midwest Office: 332 S. Michigan Ave., Chicago 4, Ill.

Eastern Office: 790 Broad Street, Newark 2, N. J.

## Products (cont'd)

The other new model is designated the JSMT utility tamper. The machine has a gasoline engine and four Jackson TM1161 vibratory tamping units. It is designed for work in all but the most difficult conditions, including yard and branch-line spot tamping and surfacing, tightening up behind tie gangs and emergency tamping at washouts. In addition, the unit can be used in small or soft ballast, on new construction and to make high lifts. Both models are said to achieve satisfactory results by cross tamping. They are designed for easy, low-cost operation and maintenance. Jackson Vibrators, Inc., Dept. RTS, Ludington, Mich.

(Circle 148 on TIME-SAVER card)



Plastic insulation for . . .

### Liquid coolers

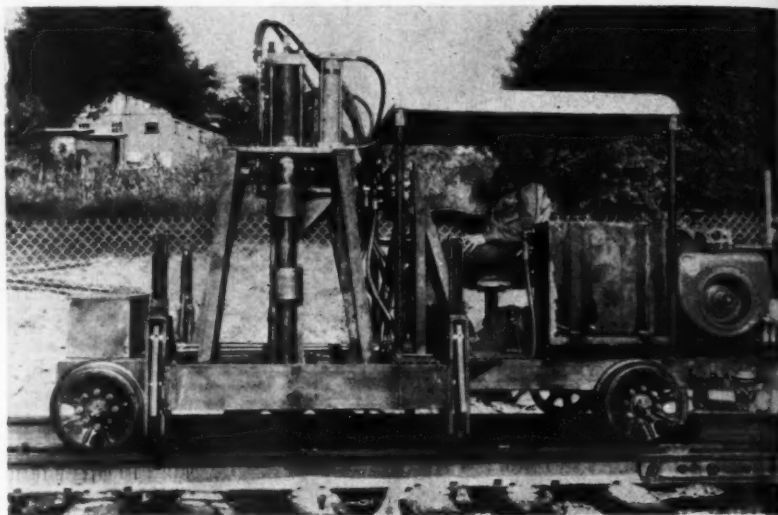
FOUR new plastic-lined models have been added to the Igloo line of liquid coolers. Available in 2, 3, 5 and 10-gal sizes for either hot or cold liquids, the new coolers have lightweight urethane foam applied inside the walls as insulation. In addition, the coolers are equipped with a new replaceable, seamless, high-density polyethylene liner to hold the liquid. The liner is claimed to provide better sanitation, complete freedom from taste and odors and high temperature resistance.

The new coolers retain the galvanized corrugated steel outer wall and recessed spigot of previous models. However, the latter is made from molded plastic. The new spigot is replaceable and is stated to provide longer life and to eliminate heat

transfer from within the cooler. The new coolers also are equipped with a Keeper-Kord for securing the lid to one of the carrying handles. The manufacturer states that the plastic-lined coolers are over 20

per cent lighter than metal-lined models and are twice as efficient in maintaining hot or cold liquids. Igloo Corporation, Dept. RTS, Memphis 18, Tenn.

(Circle 149 on TIME-SAVER card)



Tie renewals speeded by . . .

### Tie Shear

FOR REMOVING failed crossties from the track without disturbing the track surface, a machine designated the Tie Shear has been made available. This machine is a self-propelled unit which cuts the tie just inside the tie plates of both rails, picks up the severed portion, carries it forward and drops it. In moving the machine forward, it is stopped to position a hydraulic-ram assembly over the vacated

area. The ram assembly is then lowered and activated to force the tie butts out of the track.

The manufacturer states that this machine, with one operator, will remove approximately 60 crossties per on-track hour, depending upon the number of renewals. No scarifying of the ballast cribs is required because the shearing heads are said to penetrate the ballast easily and shear the tie. Set off wheels are provided. Fred W. Holstein Co., Dept. RTS, Hopalong, N. J.

(Circle 150 on TIME-SAVER card)



MODEL 922 Traxcavator is equipped with a 1¼-cu yd bucket and is powered by either a 6-cylinder gasoline engine or a 4-cylinder diesel engine.

Two new models announced . . .

### Wheeled Traxcavators

THE CATERPILLAR line of wheeled Traxcavators has been increased by the addition of the 80-hp Model 922 and the 140-hp Model 966. Both models have an open operator's compartment and have all the loader lift mechanisms located com-

pletely ahead of the operator's position. The 922 is equipped with a 1¼-cu yd bucket and is powered by either a 6-cylinder gasoline engine or a 4-cylinder diesel engine. It has a maximum lift of 12 ft 2 in, a dumping reach of 25¼ in and a breakout force of 13,700 lb. The power train of the 922 includes a two-speed power shift transmission, torque converter, auxiliary transmission and a planetary final drive.





## Speed Yard Operations at Less Cost with Racor® No. 22 Stand!

The word has been passed in a number of yards: ladders and other areas equipped with Racor No. 22 Switch Stands may be run through. Result: time and money saved by eliminating costly switcher stops and delays.

This husky switch stand will take any number of run-throughs and automatically complete the throw and the proper indication. The hand lever stays where it was.

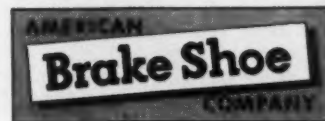
Even in yards that will not permit switch trailing, the No. 22 stand will save money by eliminating the costs of acci-

dentally damaged switches, rerailing, operating delays, locomotive repairs.

The Racor No. 22 Switch Stand makes switch point adjustment easy, too. Every stand is equipped with a heat treated, forged steel, adjustable crank eye that is actually stronger than rigid types. Accurate adjustments can be made without respiking stand.

If you are interested in speeding up your operations and saving money with this heavy-duty stand, let your Brake Shoe representative know.

RAILROAD PRODUCTS DIVISION  
530 Fifth Avenue • New York 36, N.Y.  
IN CANADA: DOMINION BRAKE SHOE COMPANY, LTD.



*Quality products  
cut your ton-mile costs!*

## Products (cont'd)

The 922 has a top speed of 19 mph forward and 24 mph in reverse.

The Model 966 is equipped with a 2¾-cu yd bucket as standard equipment. It has a maximum lift height of 154 in, a maximum reach of 35¾ in at that height and a breakout force of 24,000 lb. The unit is powered by a 6-cylinder turbo-charged diesel engine and is equipped with a 24-volt direct electric starting system. A gasoline starting system is available as optional equipment. Both systems incorporate in-seat starting. *Caterpillar Tractor Company, Dept. RTS, Peoria, Ill.*

(Circle 151 on TIME-SAVER card)



For 1 to 5-gal containers . . .

### Airless spray unit

A 5-gal airless spray unit is available for 1 to 5-gal containers. Known as the Graco "Monark," the unit weighs 46 lb and is equipped with a large capacity pump with full stroke and an air-operated agitator. It incorporates an instant-latch cover for fast color changeover and easy carrying. The manufacturer states that the Monark is designed for production work and that the unit can handle protective coatings, water-base paints, lacquers or final finish paint when used with the Graco "Golden" gun and spray tips. *Gray Company, Inc., Dept. RTS, 1066 Sibley St., N. E., Minneapolis 13, Minn.*

(Circle 152 on TIME-SAVER card)

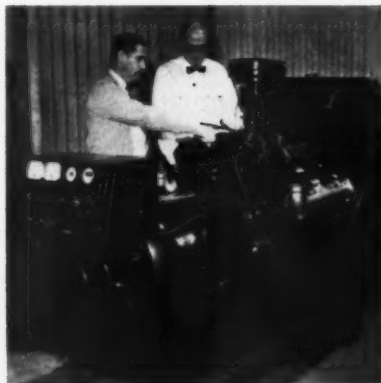
For industrial use . . .

### New herbicide

A NEW granular herbicide is available which was developed specifically for industrial use. Known as Ureabor 31, the herbicide is claimed to provide a high degree of control of marginal weed species, such as dandelion, plantain, chicory, daisy, bouncing bet, dock, thistle and a number of woody vines and shrubs. The manufacturer states that the material kills weeds in a single treatment and provides a maintenance-free surface for a year or longer. The new formulation has been

field tested for four years on industrial sites in the United States and Canada. A more concentrated formulation, called Ureabor 62, is available to large consumers who can save on hauling and handling costs. *United States Borax & Chemical Co., Dept. RTS, 630 Shatto Place, Los Angeles 5, Calif.*

(Circle 153 on TIME-SAVER card)



Heavy-duty service for . . .

### New electric plant

AVAILABLE in all standard voltages, the new Kohler heavy-duty electric plant is rated at 85 kw for standby duty and 75 kw for continuous duty. It replaces a former plant rated at 75 kw. The new plant is powered by an eight-cylinder, V-type engine which develops 168 hp at 1800 rpm. The unit is available in models for both gasoline and gas-gasoline operation and with either remote or push-button starting. Radiator-cooled or city-water-cooled models also are available.

Standard equipment includes automatic voltage regulator, anti-dieseling device for gasoline models, electric-solenoid gas-shut-off valve for gas models, low oil pressure and high water temperature cutouts and the new plant-mounted combination controller and instrument panel. The plant also is equipped with a heavy-duty skid base and vibro mounts on engine and generator. *Kohler Company, Dept. RTS, Kohler, Wis.*

(Circle 154 on TIME-SAVER card)

Collapsible for moving . . .

### Housing units

A NEW structure is available for housing work crews which can be collapsed into a compact unit for moving from one location to another. Known as the Elder "Knock-down" Field Housing Unit, it consists of a steel skid base, tilt-up side walls which are mounted on continuous hinges, end walls that are bolted to the sidewalls and a one-piece roof which is set on the walls and locked into place. Walls consist of a treated wood frame covered on the outside by aluminum over plywood and on the inside by mahogany paneling. The manufacturer states that the unit is fully insulated and that walls, roof and floor are air tight.



The unit has a heavy-duty plywood floor, weatherproof windows and doors, and screen doors. It can be mounted on wheels for use as a trailer. Sizes available include 8 ft by 16 or 20 ft and 10 ft by 16 or 20 ft. *Elder Trailer & Body, Inc., Dept. RTS, Denver 16, Colo.*

(Circle 155 on TIME-SAVER card)



For M/W vehicles . . .

### Railroad radio

DESIGNED for use in maintenance-of-way vehicles, the new self-contained MO-TRAC 64/12 universal railroad radio operates from either 64 or 12-volt dc power sources. The single unit consists of a transmitter-receiver, handset, controls and two speakers which supply eight watts of audio power. It mounts in a T-frame rack which latches on both sides to hold the set firmly in place. The radio is completely transistorized, with the exception of tubes in the transmitter chassis, and provides 25 watts of RF power output. The unit also can be used in diesels or cabooses and can be quickly converted for operation in a standard AAR mounting rack, it is claimed. *Motorola, Inc., Communications Division, Dept. RTS, Chicago 51.*

(Circle 156 on TIME-SAVER card)

**\$15,000 or \$144,000**

## **Which do YOU want to pay for bridge protection?**

One large railroad\* recently sprayed a bridge with Dearborn NO-OX-ID® at a cost of only \$15,000. It formerly cost \$144,000 to paint this bridge by conventional methods.

The bridge foreman of a large midwestern railroad\* reports:

"It took a three man crew only three weeks to spray 14 bridges with Dearborn NO-OX-ID. Conventional painting procedures would have required three months' time and more than triple the manpower."

No wonder that, on more and more railroads, they don't talk about bridge "painting" any more.

NO-OX-ID gives one-coat, long-lasting mechanical and chemical protection...contains special bonding and wetting agents...requires less surface preparation...adheres well even over old paint...easily applied, with Dearborn's proven methods.

\*Send today for names and application details.

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## Distributing crossties along the track

Some roads still unload and pile crossties at station grounds, then distribute them by truck or by motor car and push cars. Isn't it more economical to distribute ties directly from the cars in which they are delivered, either by work train or local freight?

### For heavy renewals only

By J. P. HANGES  
Roadmaster  
Chicago & North Western  
Iron Mountain, Mich.

In just about every instance where I have seen ties piled at station grounds, a carload or so of ties is involved. In our case these ties are furnished during the winter months when snow conditions prevent the distribution of ties. Side-track ties for yards, of course, would be piled while awaiting use. In many cases the piled ties are those which section crews will spot in where needed most.

When work trains or way-freight service are available and ties are to be distributed uniformly heavy for long distances, it is more economical to use this method of distribution. The advantages are greatly reduced handling and the elimination of lost time traveling by motor and push cars with each small load. The most desirable time to use

a work train is when a large number of ties is to be distributed for a mechanized tie gang. Usually, this force has equipment for the exact positioning of the ties at the time of installation.

When unloading from a work train, a large number of laborers is necessary for unloading to get maximum efficiency from the work train.

During the work season, ties are furnished in small amounts of a carload or so to a section crew. In most cases we have the car spotted at the most convenient location. The ties are then unloaded directly onto push cars and taken out to the job site. In such cases the ties are spotted where they are needed most and for such distribution I cannot see how a work train or way freight would be desirable. Possibly if the motor car haul was excessive, due to the lack of sidings, ties could be thrown off in piles from local freights and then distributed as needed by motor and push car.

To date I have not had experience with tie-unloading machinery or special tie-unloading cars. Loading ties on flat cars or skeleton gondolas, rather than in box cars and full-sided gondolas, would greatly increase the efficiency of unloading ties, whether it was done with work trains or motor and push cars.

### Problem on branch lines

By M. E. LAU  
District Maintenance Engineer  
Chicago, Rock Island & Pacific  
Des Moines, Iowa

I definitely do not approve of unloading crossties at stations, and later distributing them by truck or motor car. There are very few locations where it is possible to use a truck, and distributing ties by motor cars involves loss of time due to train operation. Since a motor car hauling push cars loaded with ties requires a flagman, it would make the cost of that method of distribution average 65 cents per tie.

There is a problem of unloading ties on branch lines and on many main-line territories for the lack of local train service. Most of the local business on the main lines is now being handled by regular through trains. With the advent of diesels,

## NEW QUESTIONS to be answered in August

Do you have an answer to any of the questions listed below? If so, send it in. Payment based upon substance and length — will be made for each published answer. If you wish your name withheld, we'll gladly comply.

DEADLINE: June 30

- 1. What provisions for anchorage should be made when laying continuous welded rail over open decks of short steel spans? Over long steel spans? What restrictions, if any, should be observed? Explain. Should the strings be specially fabricated to keep joints a specified distance away from such bridges?
- 2. Some roads scalp all vegetation

from the ground surface under bridges; some use soil sterilants for this purpose. What are the advantages of this practice? How far should the bare area extend from center line of track? Explain.

- 3. Some roads make unit change-outs of large assemblies on roadway machines in the field. What assemblies or parts lend themselves to this practice? What are the advantages? Disadvantages? Explain. Who should do this work?
- 4. How high can curbs be built up on ballasted-deck bridges for making track raises without having the curbs tip out? When tipping

does occur, what should be done? Explain.

- 5. Is it necessary to spot surface and line track after it has been re-ballasted and raised from 1 to 3 in.? If so, why and when should this be done? Explain. Is it necessary to do this after a higher raise? Why?

Send answers to:

What's the Answer Editor  
Railway Track & Structures  
79 West Monroe Street  
Chicago 3, Illinois

Do you have a question you'd like to have answered in these columns? If so, please send it in.

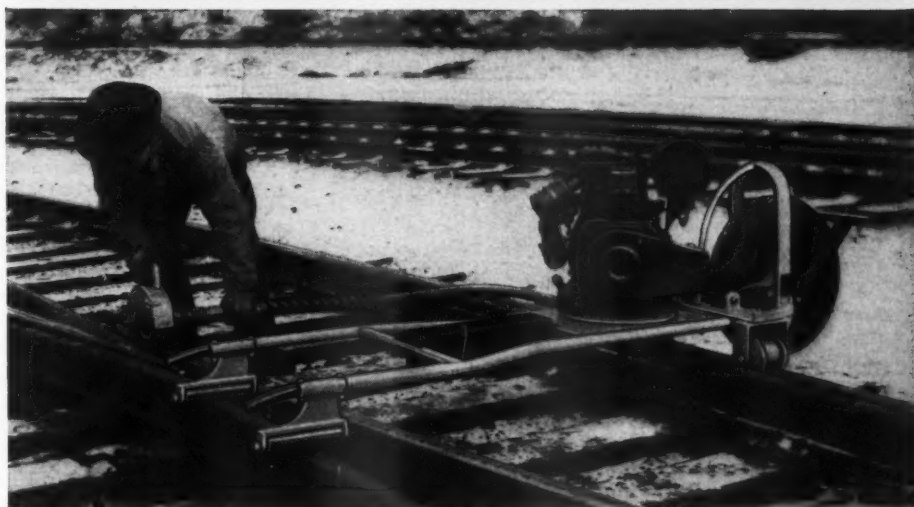
#### MODEL P-22 GRINDER

For free hand grinding of surface welds on rail ends, crossing and frogs—also for flange ways, switch points and stock rails. Belt adjustment on counter shaft housing. Substantial guards protect belts and grinder wheels, meet all safety standards. Can be furnished with electric motor instead of gasoline engine where current is available.



#### MODEL P-44 GRINDER

For on or off-track operation. Quickly removed and replaced on track, ample clearance provided, through easy adjustment to three up-and-down positions.



## GOOD, FAST, LOW-COST TRACK GRINDING . . .

### with these one-man machines!

One man can move and operate these portable grinders. Each has the following features: Powered by 6 H.P. air-cooled gasoline engines, operating through flexible shafts. Counter shafts mounted in a housing on ball bearings, packed with grease and protected from dust. Engines and drives mounted on ball-bearing swivel plates for easy operation. Governor adjustment on engines limits speed of the wheels to the safety maximum — **9500 surface feet per minute.**

AUXILIARY ATTACHMENTS slip quickly into end of flexible shaft. They include: straight wheel hand piece, angle hand piece for cup wheel, cross grinder guide and track drill.

Our nearest agent will supply complete information, or write for specification sheets on P-22 and P-44.

#### TRACK MAINTENANCE MACHINERY

- Switch Grinders
- Surface Grinders
- Grinding Wheels
- Cross Grinders
- Rail Drills
- Tie Handlers
- Track Liners
- Cross Cutters
- Bit Sharpeners
- Tie Nippers



**RAILWAY TRACKWORK CO.** 3207 Kensington Ave., Philadelphia 34, Pa.

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the scheduling and turn-around of this power requires the operation of trains on many branch lines during the night.

If no local or branch-line train service is available, then the roadmasters should accumulate sufficient cars to warrant and request work-train service. Naturally, the roadmaster and section foreman must prepare a list indicating how many crossties are required for each five poles and unload accordingly. The cost of distributing ties by work train is about half the cost of distribution by motor car.

### Unload from car

By D. C. GEMENT  
Roadmaster  
St. Louis-San Francisco  
Amory, Miss.

The unloading of ties from a car in a train is the most economical way to unload ties. When unloading from a car, you can place ties at the location where they are to be used. This eliminates the extra expense of double handling as when unloaded from a car, then stacked in the station grounds.

Our problem of track maintenance seems to be the same as elsewhere. Therefore, we use every effort possible to lower the cost of the handling.

### Combination work train

By J. GERYLO  
Section Foreman  
Canadian National  
Crerar, Ont.

The distributing of crossties after they have been unloaded and piled at stations, especially if track motor car and lorry have to be used for that purpose, is far from being economical for the railways. Where track-sections are ten miles and more in length, section forces are faced with traffic problems, especially on single track. Usually two section men are used for flag protection, so the foreman is having his gang reduced by two men. Then, trains are stopped by flag, which causes delay to both the trains and the work gang.

Delays, which occur at the place

of loading or of distribution either because trains are due or are stopped by flag, raise the cost of ties quite considerably. And still the ties are not yet installed.

Section foremen have to cope with fast passenger and freight service on some lines. If these are stopped by flag for any reason except emergency, the foremen are usually criticized for causing the delay.

I think that the most economical way of distributing ties would be by a work train. To be most economical, this should be a combination of a "scrap pick-up and work train." Scrap rails and miscellaneous scrap could be picked up along the line at the same time as when the ties are distributed.

I suggest the ties should be unloaded at  $\frac{1}{4}$  or  $\frac{1}{2}$ -mile intervals along the line where they are to be installed. In this way the section forces could distribute their ties from the piles in small push-car loads without having to use a motor car. I think the ties should only be distributed from these small piles during the installation period.

Then, if the section gangs have to stop push-car work when trains are due, they can be using this time for installing the ties already distributed, thereby increasing production and lowering tie-installation costs.

### Presents three schemes

By R. B. RADKEY  
Engineer Ties & Treatment  
Illinois Central  
Chicago

Crosstie distribution is a material-handling problem involving a large number of heavy bulky items. The factors of work schedule, work programming, tie-renewal density, labor force, track availability, work equipment and rolling stock must be considered in handling ties from treating cylinder to point of use.

It is hard to justify the use of maintenance-of-way labor to stack and store the bulk of program crossties at station grounds. Ties can be stored at a treating plant or storehouse using mechanical handling at considerably less expense. Crossties should be held at this central storage point until required in one of the three following categories of line stock along the railroad:

(1) *Program-use line stock*—Most

main-track tie renewals are performed at high-renewal density (200 or more ties per mile) and several-mile work locations. Ties to be renewed are counted and marked during program planning. New ties should be shipped from the treating plant and unloaded along the track at point of use. Special tie cars in work-train lots permit unloading and distribution with minimum force. Shipment should be at least 30 days ahead of renewal to eliminate conflict between the unloading and renewal operations.

(2) *Emergency-use line stock*—Some new ties should be on hand over the property to protect against derailment damage and small spot-work maintenance jobs. The actual number of ties stored at gang headquarters and other central locations is governed by practical considerations. Shipment and storage in banded bundles precludes expensive hand stacking and facilitates later loading to a truck or push car.

(3) *Construction-use line stock*—Ties required for construction work should be shipped in the number required at a time to fit the construction schedule. On-the-job handling should be at a minimum. Special tie cars work very well for parallel-track construction. Banded bundles can be transferred from gondola to truck or sled for distribution.

The several crosstie handling schemes in general use are based on the fact that man-handling a 200-lb crosstie out of a gondola or box car requires 3 or 4 men in a slow, hazardous, expensive operation. Special tie cars permit a few men to unload many ties by eliminating the lifting. In some cases the unloading is entirely mechanical. Banded bundles facilitate bulk handling, especially where reloading and subsequent distribution is necessary. Specialized tie-handling equipment brings on additional problems in planning and scheduling but is justified in overall economy.

### Distribute both ways

By L. G. LAWSON  
Roadmaster  
Canadian National  
Melville, Sask.

On our road we follow the practice of unloading ties where required right out of the cars they



# WOOLERY

**TIE-REMOVING TEAM IS STILL THE PERFECT COMBINATION FOR FAST TIE REMOVAL AT LOWEST COST, HIGHEST EFFICIENCY!**

Heavier rail and double shoulder tie plates have made the job of removing tie-ends an increasingly difficult one—but not for the WOOLERY team—the WOOLERY TIE CUTTER and the WOOLERY TIE-END REMOVER!

And still without trenching, jacking up track or disturbing the tie bed!

Maintenance men have discovered that welded rail, heavier rail, double-shoulder tie plates, *more and heavier* and *faster* trains have not slowed down WOOLERY efficiency.

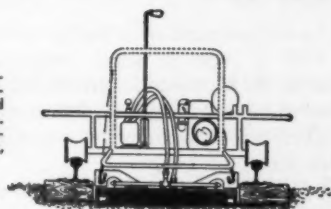
*One man can still remove tie ends with no more effort than it takes to turn the air-valve on the Tie-End Remover!*

It's done in less than a minute—in fact, it's so fast that the truly efficient team consists of TWO Tie-Cutters working ahead of the Tie-End Remover!

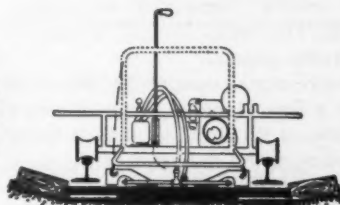


The WOOLERY Tie-Cutter cuts the tie on both sides inside the rail. The center section is then easily removed with tie-tongs and the Tie-End Remover moves in.

The WOOLERY Tie-End Remover consists of a double-ended hydraulic cylinder which drops into the tie bed left by removal of the center section. Note that there has been NO trenching or jacking! Keeps track smooth, safe!



A simple turn of the valve shoves the tie-ends outward—completely clear of the rail, pushing ballast ahead of it to open crib for the new tie! Hydraulically powered pistons work equally well and fast with single or double shoulder tie plates.



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BELOW: The Famous  
Model NU, WOOLERY  
Tie Cutter

# WOOLERY

**MACHINE CO.**  
2919 Como Ave., S. E.  
Minneapolis 14, Minn.

## What's the answer? (cont'd)

are shipped in, if at all possible. Most of our ties for renewals are received from individual private concerns and, while delivery may be made when required, in many cases this is not possible. For instance, we usually have a carryover of a certain percentage of ties. This is sound common practice because, owing to derailments, traffic, etc., it is necessary that we have some stock on hand. In some years we have had a high carryover. In cases like this it is neither desirable nor economical to peddle the ties along the right of way and leave them there for a year, owing to snow conditions, fire hazards and mowing necessities. Therefore, ties are unloaded at stations nearest to where required and

peddled either by reloading in cars or by push cars.

Peddling ties by push cars may be justified on branch lines but on any line with heavy traffic this is both costly and dangerous. Ties can easily be loaded on flat cars and peddled from either a way-freight or work train quite cheaply, especially if flat cars or special tie cars are used. The use of push cars, if flagged as is necessary, is expensive. Ties can no doubt be unloaded exactly where required in this manner but by proper planning they can also be unloaded in a businesslike manner from work train or way freight. On each telegraph pole I usually mark the number required between poles and in this manner all ties unloaded from trains are within easy distance of where required. I have unloaded as high as 1000 ties per

mile in this manner and never used a push car in getting them spotted directly.

On branch lines where train service is limited, I would certainly agree to unloading ties at stations and moving them to where required on push cars. If properly planned, a load can be taken out each morning and the ties peddled at very little cost while the gang is going to work. However, where manual flagging is required this is not possible.

Both systems have their good points and drawbacks. Ties in piles must be fireguarded while those scattered may be left unfireguarded, but then snow conditions and mowing conditions would have to be considered. This is another point where the local officer should use good judgment.

## Placing fill at new culvert

**When a timber trestle is being replaced with a pipe culvert should the work of placing the fill around the pipe be started immediately? If not, when? What precautions should be taken in placing the fill? Explain.**

### Maintain proper bed

By C. E. O'CONNOR  
Engineer of Bridges  
New York Central  
Cleveland, Ohio

The replacement of a timber trestle with a pipe or pipes requires some fill to be placed immediately. However, a number of factors must be taken into consideration some of which are noted below.

The pipe or pipes must rest on a suitable bedding of earth, sand or fine gravel, excavated to proper grade. The earth should be shaped to fit the pipe.

Depressions should be filled in with a fine granular material and a cushion of fill equal to at least three quarters of the diameter of the pipe should be deposited alternately on opposite sides of the pipe in approximately equal layers as soon as possible after pipe has been set in place.

Care should be taken to avoid displacement of the pipe and the fill should be thoroughly tamped under and around the pipe as filling progresses. No cinder fill should be placed within 12 in. of any pipe. No

heavy construction equipment should be permitted on the culvert until a compact cushion of fill equal in depth to about one-half of the diameter of the pipe is in place.

No embankment material should be dumped from a trestle until a cushion of fill equal to 15 per cent of the height of the final fill has been placed over the top of the culvert.

Where dual pipes are placed between a half and a full diameter of each other, extreme care should be used on material used for fill, and care used in tamping. Proper tamping should relieve stress from ties or struts used on pipes over 54 in. in diameter.

### Place fill in layers

By ROBERT EVANS  
Railroad Sales Engineer  
Armco Drainage & Metal Products, Inc.  
Chicago

Corrugated metal pipe structures should be placed on a stable earth or fine granular foundation. They should never be installed on sod, fro-

zen earth or on a bed which contains boulders or rocks.

Selected, drainable backfill material is preferred but most local fill material can be used provided it is carefully placed and compacted. It should be free from large rocks and hard lumps or clods larger than 3 in. in diameter. Frozen fill, sod, cinders or earth containing a high percentage of organic material should not be used. Granular material containing a small amount of silt or clay is ideal, since it makes a dense, stable fill.

Fill material under haunches and around the structure should be placed alternately in 6-in layers on both sides of the pipe to permit thorough tamping. The fill is placed alternately to keep it approximately at the same elevation on both sides of the structure at all times.

Tamping can be done with hand or mechanical equipment, tamping rollers or vibrating compactors, depending upon field conditions. Of more importance is that it be done carefully to insure a thoroughly tamped backfill.

Compaction of fills by puddling or jetting is not recommended except for cohesionless, sandy or sandy-gravel material. The reason puddling will not work satisfactorily in clayey soils is that it tends to produce a permanently unstable condition.

(Continued on page 54)



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**Presses anchor to tie for positive grip**

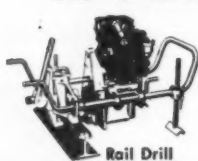
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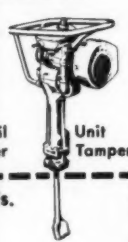
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## What's the answer? (cont'd)

In backfilling around and over a structure, the loads of heavy earth-moving or compacting equipment may exceed those for which the structure was designed. Therefore, it is always advisable that the structure be covered adequately before direct loads are applied.

## Must consolidate soil

By H. M. PEARSON  
Assistant (Works) to Chief Civil Engineer  
British Transport Commission  
London, England

After completion of the pipe, filling should be started at once while the men are still on the job. This is particularly needful if there is a speed restriction in operation over the bridge. Work should, therefore, be completed as soon as possible to enable full-speed traffic to be resumed without delay.

Concrete foundations will have gained sufficient strength to carry the relatively small additional load of filling. Moreover the concentrated loading of tractors or other mobile equipment will be spread through the fill, and will not, therefore, impose overloading on the foundations.

In tipping the fill much depends on how the operation is carried out. This is particularly the case if the spoil is brought to the site in rail tippers. Heavy soil, when dropped or tipped from a height, produces strong unrelieved upward forces in soft ground. These may be sufficient to produce a ridge of soil 12 or 18 in near the toe of the new bank. Care must be taken to see that this does not raise the bed of the stream. If the fill consists of soil, it will have to be consolidated by dozers, rollers or tampers, and watered to insure that it is fully compacted before the bridge is removed and trains allowed to run over the new work at full speed.

The fill may consist of soil, but it must on no account contain any clay. Stony material is the most satisfactory. The best method is undoubtedly to bring the fill to the site in tip-lories. The gradual growth under the working of these vehicles, as well as rolling, insures that the fill is fully consolidated as the bank ris-

# TIME-SAVER READER SERVICE

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Check over the items below and on the other side of this page. They refer to products described or advertised in this issue, or to free literature offered by manufacturers. If you desire additional information about any of the products, or copies of the literature, circle the corresponding numbers on one of the cards, and drop it in the mail after typing or printing your name, etc. With one card you can get information on all the items listed.

## Products advertised

100. Track Liner—New machine uses weights to bump track into final position. (Page 2)

101. Special Trackwork—Offers engineering and fabrication service for all kinds of special jobs. (Page 3)

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110. Improved Fair Rail Anchor—Discusses gripping power, bearing area and other features. (Page 12)

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**122. Track Welding**—Offers equipment or services for repairing engine burns or battered rail ends. (Page 26)

**123. Electric Snow Melters**—Available in either ballast or tubular types. Brochure available. (Page 35)

**124. Hydraulic Cranes**—Line includes five models with capacities up to 11 tons. (Page 39)

**125. Medal JR-300 Conversion Unit**—New unit is designed for application on vehicles with gross weight under 4800 lb. (Page 41)

**126. Unit Rail Anchor**—Points out features of anchor and advantages of its use. (Page 43)

**127. Racor No. 22 Switch Stand**—Says unit may be run-through to eliminate switcher stops and delays. (Page 45)

**128. NO-OX-ID Bridge Coating**—Says one coat gives long-lasting mechanical, chemical protection. (Page 47)

**129. Model P-22 Track Grinder**—Designed for free-hand grinding of surface welds on rail ends, etc. (Page 49)

**130. Model P-44 Track Grinder**—Portable unit can be operated either on or off the track. (Page 49)

**131. Model NU Tie Cutter**—Cuts tie on both sides inside rail to permit removal of center section. (Page 51)

**132. Water Coolers**—Points out advantages of equipping work crews with portable units. (Page 53)

**133. CampCars**—Says highway-type housing units can pay for themselves in about a year. (Page 55)

**134. Bio-Hog Tie Grinder**—Machine grinds up ties and blows chips on the ground. Is mounted on a small car. (Page 56)

**135. Mannix Auto-Track**—Describes operation of this track rehabilitation equipment. (Page 57)

**136. In-Place Treatment of Piles**—Offers bridge inspection and treatment service for prolonging life of timber bridges. (Page 58)

**137. Replacement Hose Lines**—Describes use of adapters and hose lines with reusable fittings to eliminate piping failures on tamper. (Page 59)

**138. Paint Hammer**—Makes paint spot on ties to indicate removal or on rails to indicate class. (Page 60)

**139. Rail Grinding Service**—Contract arrangement obviates need for capital investment by railroad. (Page 61)

**140. Tool and Supply Car**—Tubular steel unit weighs 140 lb and has a capacity of 2000 lb. (Page 61)

**141. Burro Crane**—Can be used for laying long welded rails or doing jobs in yards or stores department. (Page 62)

**142. Model 40 Burro Locomotive Crane Ditcher**—Has long digging radius for ditching and loading cars. (Page 62)

**143. Acrylic Switch Lamp Lens**—Internal elements are hermetically sealed against dirt and moisture. (Inside back cover)

**144. Gautier Rail Anchor**—Applied by hand or machine. Says anchor cannot be overdriven. (Back cover)

### Items described in Product Section

**145. Model 4FW-A Ballast Regulator**—Machine is equipped with new reversible V-type plow. (Page 42)

**146. Rubber-Tired Cranes**—Units of 12½ and 15-ton capacities can be equipped with flanged wheels. (Page 42)

**147. Model W100 Series A Spike Driver**—Hydraulic machine has driving assembly that moves from one rail to the other. (Page 42)

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**150. Tie Shear**—Self-propelled unit for removing old ties without disturbing surface. (Page 44)

**151. Wheeled Traxcavators**—Model 922 has 1¼-cu yd bucket. Model 968 has 2¼-cu yd bucket. (Page 44)

**152. Airless Spray Unit**—Five-gallon "Monark" can be used with 1 to 5-gal containers. (Page 46)

**153. Granular Herbicides**—Ureabor 31 and 62 are designed to control marginal weed species. (Page 46)

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**155. Housing Units**—Can be collapsed into compact unit for moving from one location to another. (Page 46)

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**157. Urab Brush Killer**—Literature and free sample offered by Allied Chemical. (Page 53)

**158. Anchor Applicator**—Literature is available on the Racine on-track hydraulic "Anchor-Fast" applicator. Also on its one-rail spot tamper (No. 159 on card), rail saw (No. 160), "Oct-a-Gun" tamper (No. 161), unit tamper (No. 162), and rail drill (No. 163). (Page 54)

**164. Expansion Plates and Bushings**—Manual 55 is offered which gives data and specifications about Lubrite self-lubricating units. (Page 58)

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## What's the answer? (cont'd)

es. The slopes of the existing banks should preferably be benched beforehand (unless there is any risk of weakening them under traffic). This provides some measure of bond with the new bank where it contacts them.

## Eliminating center-bound track

What causes track to become centerbound? How can this condition be prevented without raising the track each year or two? Explain.

### Don't tamp centers

By E. E. CASH  
Supervisor of Maintenance  
Camas Prairie  
Lewiston, Idaho

If the track is now centerbound, the only way to correct this condition is to raise the track.

However, to surface track in the right way, the ties should not be tamped in the center of the tie. Only one-third of the tie at each end should be tamped and the remaining one-third at the center of the tie should be filled in very lightly, just enough to fill the opening but not tamped.

### Maintain full shoulders

By J. H. BECKER  
Section Foreman (Ret.)  
St. Louis-San Francisco  
Festus, Mo.

There are several reasons for centerbound track. Narrow fill is one of these. In this case, ballast will get away from the ends of ties and will cause them to churn. A fine ballast, such as granulated slag, will give considerable trouble of this kind.

I have noticed that some foremen will tamp the ties all the way across when raising track. This is a practice I never did follow because it

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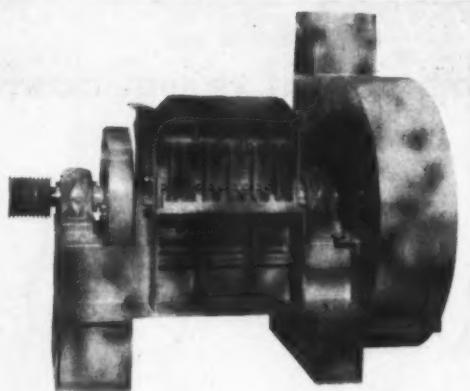
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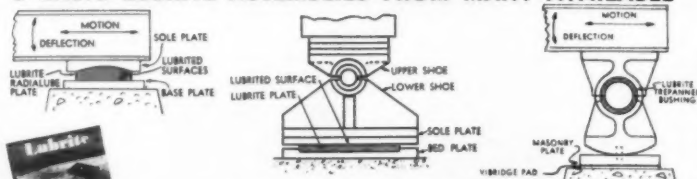
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## What's the answer? (cont'd)

is the wrong way to tamp. I believe tamping 16 in from the rail on each side is enough and then just enough ballast should be cut into the center to fill up the hole under the tie. This will also apply to track having weak shoulders and where the dump is so low that it allows the ballast to get away from the ends of the ties.

## What is cycle maintenance?

What is the greatest problem in getting men to fully understand and apply cycle maintenance? What education in this respect would be helpful? Explain.

### Know long-range program

By H. W. SEELEY  
Engineer Maintenance of Way  
Detroit, Toledo & Ironton  
Dearborn, Mich.

Cycle maintenance has been a rather drastic change from the maintenance methods with which most of us have become familiar over a period of years. In some cases, it has been difficult for the men out on the road to follow this change.

The most important factor directly under the control of the supervisors, foremen and other road supervision, affecting the success of a cycle maintenance program is the quality of the work. Whether it is tie renewals, track surfacing, bridge timber renewal or painting, the quality of the work must be such that it will be unnecessary to perform that class of work on that section of track or that bridge again for the life of the cycle. In the past, extra gangs did the heavy, high-production work. Section gangs followed up in many cases to take care of the detail work and correct the mistakes and omissions of the extra gangs. Now the production gang must do a complete, finished job which requires no follow-up work.

For years we attempted to get the maximum service life from all items of material by not making renewals until the material was completely worn out. Under cycle maintenance, it is necessary that any material which will deteriorate before the end of the cycle period, to the extent that it must be renewed for safety or for adequate maintenance of standards established for the traffic carried, must be renewed while the cycle work is being done. Any remaining service life should be used by salvaging the material for use at other locations or for other purposes whenever it is economical to do so.

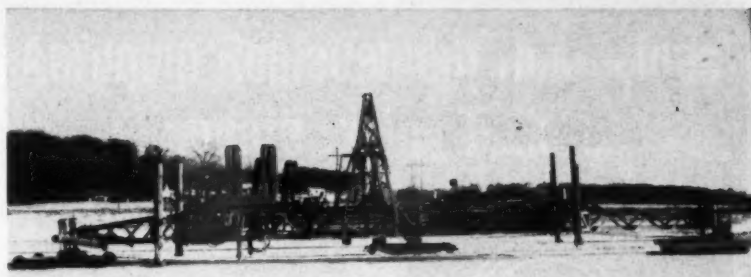
It is sometimes a temptation to use the force available for certain day-to-day maintenance work to attempt to perform heavier maintenance work, especially toward the end of the cycle period. These forces have their own assignments and, except in emergencies, should not be used for the type of work that can be done more efficiently and economically by properly equipped and programmed forces.

In order to have the men fully understand and apply cycle maintenance, they must be properly informed as to the objectives and programs that have been established. They must be familiar with the long-range program as well as the current annual program. They should have the benefit of any production and quality standards and cost information that is available, as well as of production methods that have been developed. Changes will necessarily be made from time to time and they should be kept informed of these changes. Most of our men, if they know what we are trying to do and are made to feel that they are an important part of the organization, will make every effort to cooperate and get the desired results.

#### Must adopt new ideas

By H. L. WOLDRIDGE  
Asst. Chief Engineer — Methods  
St. Louis-San Francisco  
Springfield, Mo.

Cycle maintenance is a relatively new innovation for most maintenance-of-way personnel. They have been trained to handle their work on the basis of spot maintenance. Now we are trying to "teach old



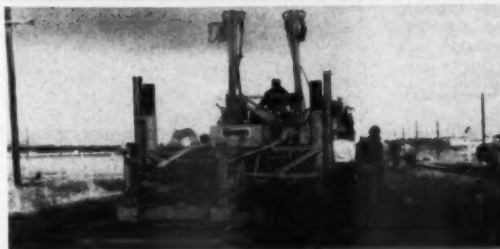
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## What's the answer? (cont'd)

dogs new tricks." Can it be done? Yes, but there are a lot of problems. It is not easy to convince a man his way is now not the best when in the past it was.

We are confronted at this time in "unlearning" people what they have been taught and have practiced most of their working careers. No longer do we unload one car of ties on a curve and floor it, but the same car of ties is now used on a mile of track under our program.

It is difficult to convince a supervisor in the field that 500 ties per mile is the proper number to put in when, based on his past experience, it should have twice that many. The question in his mind is: "Will the track get 500 more ties in 5 years or will I be stuck with maintaining this piece of track for 10 years with no additional ties?"

The answer to cycle maintenance is a well-laid plan carefully carried out to build up confidence in the field supervisor that his track will get 500 more ties in 5 years. This entails long-range planning based on estimated future income so that the plan will be workable both in satisfying the required maintenance standard and the available funds for maintenance. In other words, we shouldn't start out with a four-year cycle program when with a little figuring it becomes evident that there are only sufficient funds for a 5-year plan. After a cycle-maintenance program is carefully worked out, it should be adhered to if at all possible. This is the only way you

will build up confidence and help field supervisors to see that cycle maintenance does pay.

Railroad incomes are confronted both with seasonal and national economy fluctuations. These make it rather difficult to stay with our plans at times. If at all possible during the recession period, however, we should not reduce our cycle maintenance program, but curtail maintenance expenditures elsewhere. This can usually be done if the plan is properly prepared at the start.

### Requires mechanization

It takes mechanization to make cycle maintenance economical. In fact, they go hand-in-hand. Plans must be made to replace the equipment as it wears out or becomes obsolete. Just as the personnel department lays plans for replacing personnel as employees retire, and for educating current personnel on new methods and procedures as old ones become obsolete, we must have a similar plan for replacing equipment when it gets old, or when it becomes obsolete account of new developments. There is nothing that discourages a field supervisor more than being assigned equipment that breaks down half of the time, because it prevents him from maintaining his planned schedule.

It is felt that the success of cycle maintenance lies with management to work out a well-rounded program that can be followed even though business wavers, so that a feeling of confidence that cycle maintenance will work can be instilled in the field supervisor.

## Rail's affect on surfacing cycle

Does the condition of the rail in track have any affect in determining the surfacing cycle? If so, explain what conditions these are and how they affect the cycle.

### 'Definitely yes'

By J. T. SHEPHERD  
Roadmaster  
Norfolk & Western  
Buena Vista, Va.

The answer to this is a definite "yes". Any maintenance officer who walks his track occasionally or in-

spects it closely from motor cars has noticed the following:

Where joints are battered, where rail becomes corrugated, where low rails on curves have developed irregular surface, or where driver burns are profuse, there will be found pumping track. When correct-

ed by digging out, cleaning ballast, or spot tamping, such track quickly returns to its muddy condition unless the rails are changed out. Such places must be ballasted much more often, and maintained at much greater cost than the stretches of track with well-maintained rail.

The practice of looking at the date the rail was rolled and counting the millions of tons over it since laying, rather than noting the excessive cost of maintaining such track, can result in wasted dollars. Factors leading to bad rail conditions are primarily curvature and grade, and it is good practice to be more liberal in relaying rail in these trouble spots, than in normal stretches of track. Such a practice will surely pay off in the long run.

### Batter is detrimental

By W. R. MAYER  
Supervisor of Track  
Pennsylvania  
Marion, Ind.

The condition of rail in track definitely has some affect on the surfacing cycle.

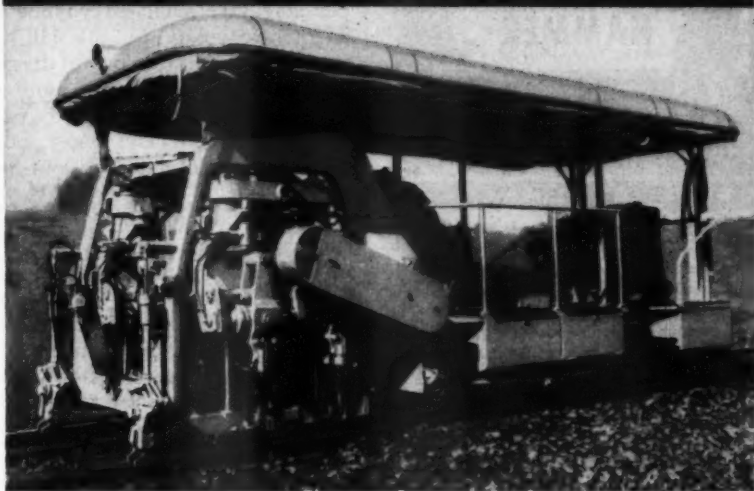
Any variation or irregularity in wheel-contact surface of the rail will have an adverse affect on the surface condition of track. Engine burns are a prime example of this type of condition. Shelly and corrugated rail also affect surface in varying degrees.

Rail-end batter, however, is the most detrimental factor to maintaining a smooth track and will have the most bearing on the frequency of a surfacing cycle. Batter can result from normal passage of traffic or can be hastened by a number of conditions. Some conditions which will cause batter if left uncorrected are chipped rail ends, loose joints, worn joint bars, and unevenness in rail height due to classification tolerances or rail spotted in. Also improper expansion openings at the ends of the rail, caused by incorrect shimming when rail was laid, and inadequate anchoring will tend to cause batter.

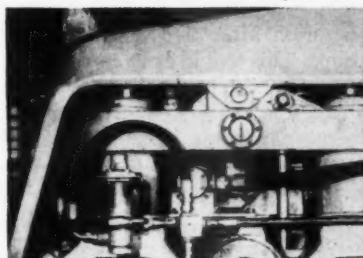
All the rail conditions mentioned will have a tendency to shorten the surfacing cycle. Their apparent effect will be more noticeable on roads having high speeds, heavy tonnage and tracks with normal traffic in both directions.

## Aeroquip Replacement Hose Lines Eliminate Piping Failures

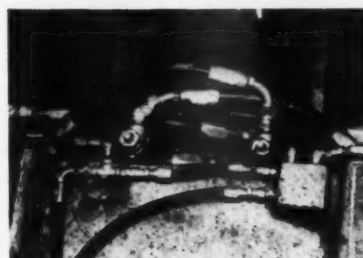
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The flexible hose lines eliminated failures due to vibration. Field assembly of Aeroquip Hose and Reusable Fittings permits quick, easy replacement on the job. Parts inventory is greatly simplified, too, since all hose lines are made from a small supply of each hose size and a few spare reusable fittings.

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## Treatment for brush

(Continued from page 31)

be directed at the lower one-third of the brush. Conifers, evergreens and sweet gum should be sprayed overall. Usually, 100 to 200 gal of spray per acre give sufficient volume for adequate coverage, but this will vary somewhat with the brush density. Dormant applications are more effective than foliage sprays on oaks, maples, conifers and most other species that do not send out root suckers.

Summer applications of invert emulsion in low volume appear to be superior to conventional applications of 2,4-D and 2,4,5-T for controlling resistant species, such as sumac, sassafras and black locust. Amitrol at 4 to 8 lb per 100 gal of water will control black locust, sumac and ash. Amitrol plus TCB at 4 lb each per 100 gal of water will kill all these resistant species, and is also fairly effective against sassafras.

For more effective brush control, it is suggested that a summer spray be used after two dormant applications. This would help in controlling certain resistant species.

## Biographical briefs

(Continued from page 10)

ence degree in civil engineering. He entered the service of the NYC in 1949 as a rodman at Columbus, Ohio, being promoted to transitman there the following year. Mr. Berkshire was further promoted to instrumentman at Cleveland, Ohio, in 1951, assistant supervisor track at Kendallville, Ind., in 1952, assistant engineer at Springfield, Ohio, in 1954, assistant methods engineer at Detroit, in 1955, and assistant division engineer there in 1956. He was advanced to division engineer at Detroit in 1957, also serving in that capacity at Toledo, Ohio. Mr. Berkshire was promoted to assistant district engineer at Detroit in 1958, the position he held at the time of his recent promotion.

**Frank M. Schilt**, 33, who was recently promoted to terminal engineer on the Baltimore & Ohio at Baltimore, Md. (RT&S, Oct., p. 10), was born at Olney, Ill., and graduated from Purdue University in 1950 with a Bachelor of Science degree in civil engineering. He entered the service of the B&O in 1951 as a blueprinter at Cincinnati, Ohio, being promoted to assistant in the engineering corps there four months later. Mr. Schilt was promoted to assistant division engineer at Newark, Ohio, in 1955. He was serving in that capacity at Baltimore at the time of his recent promotion.

**Erick M. Johnson**, 56, who was recently promoted to division roadmaster on the Duluth, Missabe & Iron Range at Proctor, Minn. (RT&S, Oct., p. 10), was born in Sweden. He entered the service of the DM&IR in 1924 as a section laborer, being promoted to foreman at Calumet, Minn., the following year. Mr. Johnson was further promoted to general foreman at Hibbing, Minn., in 1943 and assistant division roadmaster at Virginia, Minn., the following year. He was serving in the latter capacity at the time of his recent promotion.

**Helmer E. Holm**, 43, who was recently promoted to assistant division roadmaster on the Duluth, Missabe & Iron Range at Two Harbors, Minn. (RT&S, Oct., p. 10), was born at Soudan, Minn. He entered the service of the DM&IR in 1936 as a section laborer at Tower Jct, Minn., being promoted to assistant section foreman at Ely, Minn., in 1943. From December 1943 to November 1945 he was in military service with the U. S. Army. Mr. Holm was appointed assistant section foreman at Robinson, Minn., in December of the latter year and promoted to floating gang foreman the following year. He was further promoted to section foreman at Jordan, Minn., in 1947, serving also in that capacity at Skibo, Minn., and Allen Jct. Mr. Holm was advanced to general track foreman in 1954, the position he held at the time of his recent promotion.

**Robert G. McManus**, 27, who was recently promoted to roadmaster on the Rock Island at El Dorado, Ark. (RT&S, Dec., p. 10), was born at Highland Park, Ill., and graduated from Bradley University in 1955 with a Bachelor of Science degree in civil engineering. He entered the service of the Rock Island in 1955 as an instrumentman at Winterset, Iowa, being promoted to draftsman at Chicago three months later. From July 1955 to July 1957 he was in the U. S. Army, serving as a topographic surveyor in Japan. Mr. McManus was appointed assistant engineer at Fairbury, Neb., upon his return from military service and was made operations trainee the following year. In 1959 he was promoted to track supervisor at Fairbury. He was serving in that capacity at Goodland, Kan., at the time of his recent promotion.

## Association news

### Metropolitan Maintenance of Way Club

The annual stag outing of the club will be held on June 1 at the Wayne Country Club, Paterson-Hamburg Turnpike, Prekness, N. J. Activities are scheduled to commence at 10:00 am.

### Mississippi Valley Maintenance of Way Club

The May meeting of the club will be held on the eighth at the usual location, the Ambassador-Kingsway Hotel, 108 North



Kingshighway, St. Louis, Mo. Designated as presidents' night, the meeting will have as its principal speaker R. K. Heineman, president of the Alton & Southern, who will speak on maintenance of way. The meeting also will include election of officers for the ensuing year. The social hour will commence at 5:30 pm, with dinner starting at 6:30.

### American Railway Engineering Association

Three standing committees and a subcommittee have scheduled meetings to be held in May. These are as follows: Roadway and Ballast, May 8-9, Penn-Sheraton Hotel, Pittsburgh, Pa., including an inspection trip to the laboratories of the U. S. Steel Corporation; Track, May 16, Room 707, AREA headquarters, Chicago, including a meeting of Subcommittee 3 on May 15; and Masonry, May 18-19, Netherland-Hilton Hotel, Cincinnati, Ohio, including an inspection trip to the laboratories of the Ohio River Division of the U. S. Army Corps of Engineers.

### Supply trade news

**THOMAS A. EDISON INDUSTRIES—M. I. Rayner**, assistant division manager of the **Primary Battery Division**, has been promoted to vice president and division manager, succeeding **William J. Savage** who

retired on May 1 after more than 45 years of service. In addition, the following changes have occurred recently: **Walter E. Olsen**, district manager at Bloomfield, N. J., to acting general sales manager of the division; **Alfred W. Frank**, district manager at Bloomfield, to Eastern regional manager there; and **James R. Long**, district manager at Chicago, to Western regional manager there.

**L. B. FOSTER COMPANY—Jack McAninch** has been appointed sales representative at Houston, Tex.

**JOHNSON RUBBER COMPANY**—The appointment of three representatives to handle sales of VulcaBond rail joints has been announced by **Richard E. Morrison**, sales manager of the Railroad Sales Division. The representatives and the areas they will serve are as follows: **Fred W. Holstein Company**, Hopatcong, N. J., the eastern states; **Western States Supply Company**, Omaha, Neb., the central-west states; and **W. A. Blackford Company**, San Francisco, Calif., the Pacific Coast states.

**KERSHAW MANUFACTURING COMPANY—Thomas L. Hoffman**, special sales representative, has been promoted to district sales manager for the Chicago area and **Carl H. Olds**, service representative in the Chicago area, has been promoted to sales and service representative for the St. Paul-Minneapolis area. Mr. Hoffman's headquarters will be located in Room 319, Railway Exchange Building, 80 East Jackson Blvd., Chicago.

**MCKIERNAN-TERRY CORPORATION—G. Robert Compton, Jr.**, vice president in charge of sales, has been appointed executive vice president.

**MOBIL OIL COMPANY—Charles F. Garney**, chief engineer, Commercial Department, Chicago Division, has been appointed manager of railroad sales, National Accounts Department, with headquarters at Chicago.

**OSMOSE WOOD PRESERVING COMPANY—David B. Harrison** and **John W. Storer** have been appointed vice presidents of the company. Mr. Storer is manager of the Railroad Division.

**PULLMAN-STANDARD—MATISA**—The Pullman-Standard Division of **Pullman, Inc.**, has signed an agreement with the **Matisa Equipment Corporation**, Chicago Heights, Ill., under which the latter company will act as sole agent for the sale of Pullman-Standard's line of railroad track-maintenance machines in the United States, according to an announcement by Pullman-Standard. As noted in the April issue, **Thomas Y. Gehr**, formerly manager of Pullman-Standard's Track Equipment Department, has resigned that post and has been retained by Matisa as general sales manager of Matisa Equipment Corporation and Matisa Railweld, Inc. Among Pullman-Standard's power track machines that will be added to Matisa's line of equipment are the Tie Spacer, Power Cribber, Ballast Cleaner, Rail Handler and Tool Carriage. Pullman-Standard will continue to manufacture its own equipment at its Hammond (Ind.) plant.

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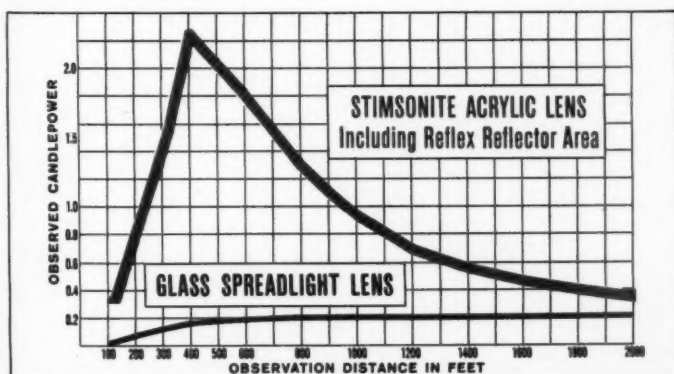
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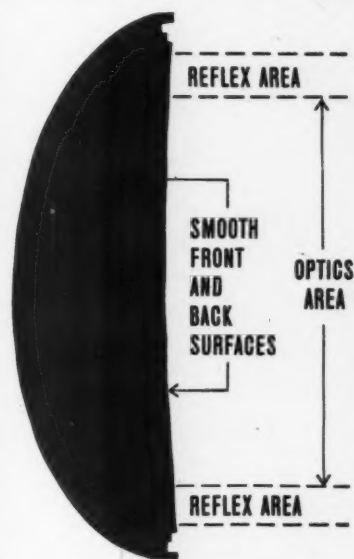
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The chart below compares candlepower values of a standard glass 30° spreadlight lens and a new Stimsonite lens as seen from a locomotive at distances from 100 to 2,000 feet. Optical efficiency of the Stimsonite lens is 150% that of conventional spreadlight design . . . combined with the bonus output of the reflex area, it produces a light indication 2 to 10 times as bright as glass throughout all operating ranges. Only Stimsonite lenses offer this reflex area for added brightness and standby safety in event of lamp failure.



Comparison of observed candlepower vs. observation distance—red lenses tested in electric switch lamp operated by an Edison Carbonaire battery, Type 2-S-J-1, using a 2.9 volt, .150 ampere inside frosted bulb. Stimsonite curve includes output from optic portion of lens plus reflex reflector area illuminated by dual PAR 56, 200 watt locomotive headlamps.



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